The Iron Age

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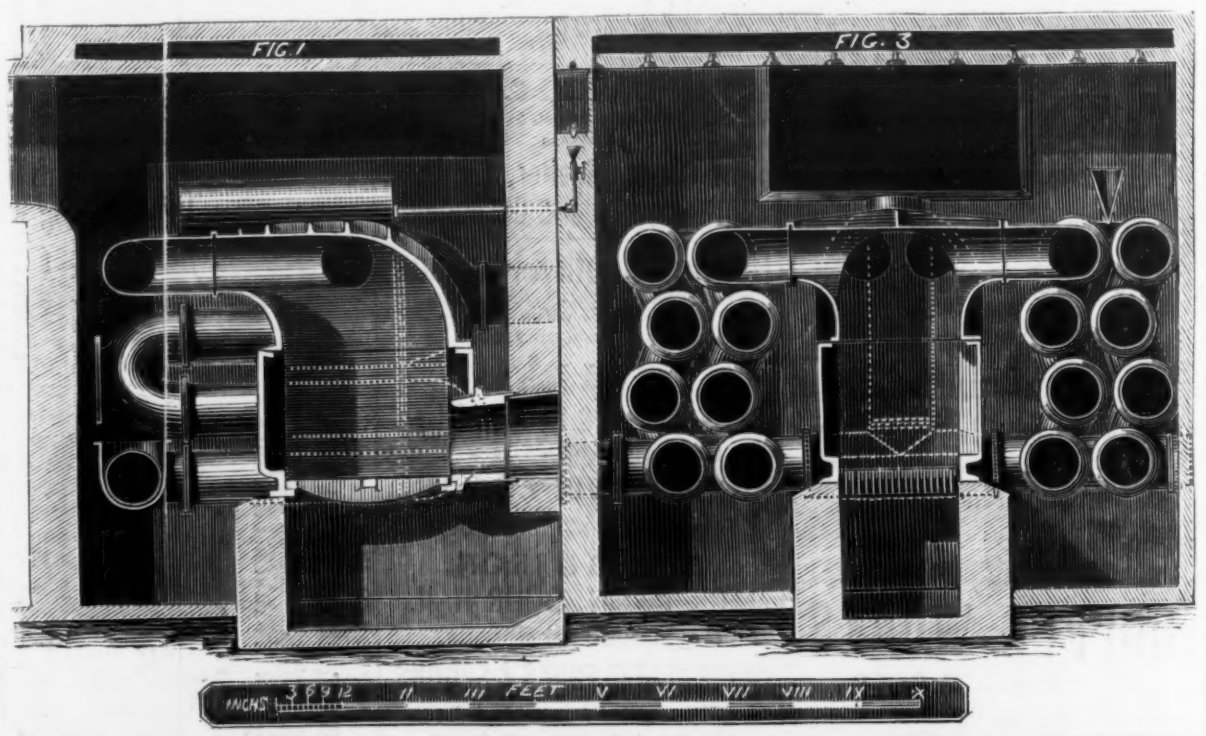
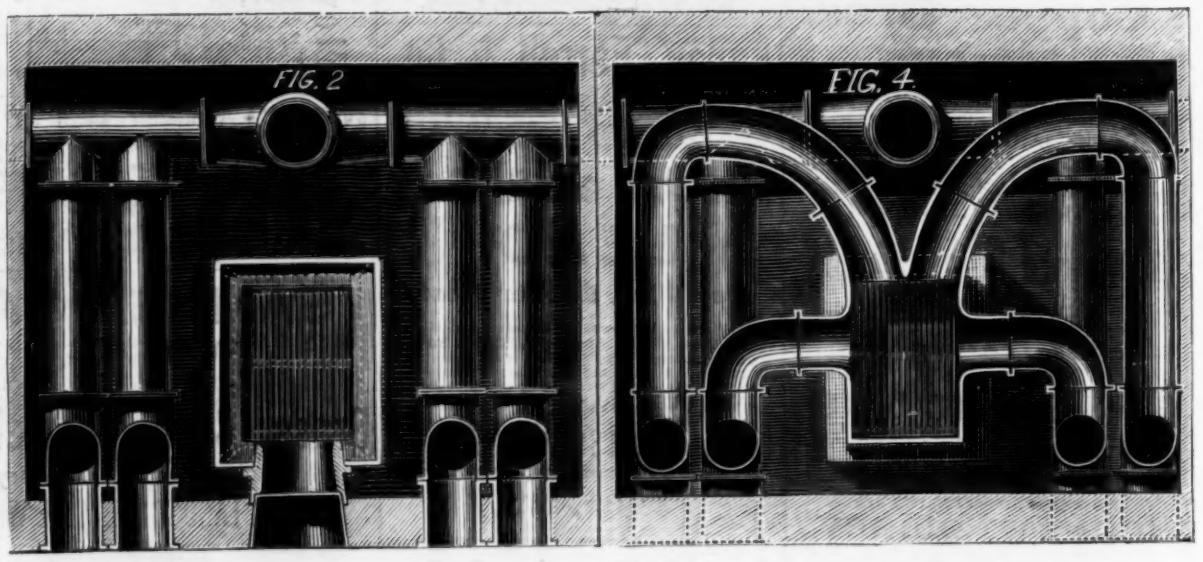
Air Heating Apparatus.

We illustrate herewith an arrangement of air heating apparatus for heating buildings, devised by Mr. J. H. Reinhardt, of Wuxburg, which will be found of interest to a large number of our readers.

The general features of the arrangement will be at once seen from the engravings. The fire is contained in a cast iron combustion chamber mounted on a brick ash pit, and the products of combustion are caused to circulate through series of large cast iron tubes before passing to the chimney. The cast iron tubes through which the gases are thus led, are all put together with faced joints, and without the use of cement of any kind, and the whole apparatus is contained in a chamber through which the air to be warmed is caused to pass on its way to the building to be heated. To prevent an excessive dryness of the air thus supplied, provision is made for dripping a sufficient supply of water on the surface of the heated pipes, thus moistening the air by evaporation. The principle on which the apparatus is constructed is shown so perfectly in our illustration that no detailed description is necessary.





AIR HEATING APPARATUS.

The Economical Limits to the use of Rolled Girders.

Examples of engineering construction, especially those of roofs, are not wanting in which a sectional area of less than 2 in. is composed of more than one bar or plate. In other words, this absurdly small sectional area as built up is a compound instead of a simple section. It can be readily understood that, insomuch as the compound or built up section requires a certain number of rivets to unite the different bars or plates of which it is composed, and that as holes must be punched or drilled for these rivets, there is a corresponding loss of material incurred. This loss is directly proportionable to the difference between the gross and the net sectional area. For instance, if we take an angle iron 3 in. by 3½ in., and suppose it riveted to the flanges and web of a solid sided or plate girder by rivets ¾ in. diameter, its gross sectional area will be 2¾ in., while the net will amount to only 10 in., thus showing a loss of nearly 50 per cent. In this calculation the diameter of two rivets has been deducted, for although the rivets in the flanges and web can be designed so as to break joint in the drawing, yet when the wrappers are taken into account, and the joints, it would not be safe practically to suppose that only one rivet hole would come in the same line of section, but allowance must be made for two. Compared at first sight with the built up section, the rolled joist has the advantage of dispensing with the riveting necessary to connect the web and flanges, since these are rolled all in one piece, and there is consequently no loss of sectional area. It would be more correct to say there is no loss of material due to rivet holes, for it will be seen that there is in larger examples considerable loss of sectional area both in the web and flanges.

A rolled joist is essentially a girder with parallel horizontal flanges, since in the process of rolling the depth cannot be altered. We are not putting any limits at present to the depth or the length of the joist, although practically the limits would be soon arrived at. Our object is to point out that were the capabilities of the rolling mill unlimited in this respect, there would nevertheless be a certain span and load beyond which the employment of rolled joists becomes wasteful of material. Beside the uniformity of depth which must prevail in a rolled girder, the sectional area must also be maintained constant, since neither the width of the flanges nor their thickness can be varied, nor the thickness of the web. So far as a span of 20 feet is concerned, or under, it is of no consequence whether any of these dimensions are varied or not; but when this span is surpassed some greater coincidence between the theoretical and actual sectional areas of the girder at different points becomes absolutely necessary if economy in construction is of any moment. Theory dictates that in every girder which is subject to the ordinary conditions attendant upon these structures, either the depth or the sectional area must vary. It is in many instances immaterial in which of these dimension the alteration is made, but one or the other must undergo it. The depth may be maintained constant provided the sectional area is diminished toward the ends of the girders in proportion to the strain; or the sectional area may be maintained constant, or very nearly so, if the depth be decreased toward the same points. The fulfillment of the former conditions gives the correctly designed parallel girder, and of the latter the bowstring. Neither of these forms can be produced from the rolls. It is true—and the advocates for the employment of rolled joists lay great stress upon the assertion—that an unscientific approximation can be made to the former of these types, not by diminishing the sectional area toward the ends, but increasing it by the use of extra plates riveted to the flanges toward the central part of the girder, which amounts to much the same thing. But, allowing that this increase of section can be obtained in this manner, the minimum or rolled section of the flange must still be constant, both in breadth and thickness. Moreover, when extra plates are riveted to the flanges in order to give an increased sectional area at the center, the principle of the rolled joist is at once departed from, and it becomes, to all intents and purposes, a built up girder, without possessing the advantages of that particular form.

It is not only in the flanges that a loss of metal occurs from the impossibility of varying their section, and also in consequence of their depth being uniform, but the web suffers as well. As the girder becomes longer so must its depth be increased, a condition which cannot be practically fulfilled without at the same time increasing its thickness. This latter dimension will be constant throughout the whole girder. Theoretically, with a uniformly distributed load, the strain upon the web of a girder at its center is *nil*, and even with a rolling load of the same intensity per foot run its amount is not of much consequence. Rolled girders are more frequently employed to support uniformly distributed, than moving loads. Consequently, the strain upon the web is nothing at the center, and a maximum at the ends. The shearing strain at the ends is equal to one-half the total distributed load. Thus the sectional area of the web at the ends must be sufficient to resist this strain, and by the conditions of manufacture it must be constant throughout the girder, although theoretically the strain diminishes to zero at the center. There is no need of pointing out the enormous loss of material which would occur in a girder of any pretensions to size, supporting a load of any consequence. This disproportion between the sectional area of the webs of rolled girders and the strains upon them must always remain, since the method which can be employed to vary the area of the flanges cannot be applied to the web. Theoretically, as the sectional area of the web must be proportioned to resist the maximum strain upon it, the loss of material in this respect is exactly 50 per cent. Practically it would not amount to quite so much as this, because there must of necessity be some material in the central portion of the web, but still the excess would be very considerable.

It will be conceded that the strongest girder is that which with a given weight of material will bear the greatest load under precisely similar conditions. Let us compare in this respect the rolled and the built up girder, and as a datum to start from, let the span be 20 ft. and the depth 1 ft., which is not far from the limit of depth hitherto attained in the rolled section. Commencing with the flanges, it is obvious that since the net sectional area of both must be equal in either to withstand the same strain, the advantage lies on the side of the rolled girder, because the gross sectional area of its flanges is equal to the net area. There is no loss of material due to the connection of web and flanges. The built up girder, on the contrary, is subject to a certain amount of loss due to the difference between the gross and net area of its flanges, and consequently the weight of material in the flanges must exceed that in those of the rolled girder in order to afford the same net sectional area. With a given net sectional area, therefore, the flanges of a rolled girder will be lighter than those of a built-up one. But, if the comparison be carried further, it will be found that what the built up girder loses with regard to the flanges it will more than gain with respect to the web. In the example selected, taken from a trade circular, the thickness of the web of the rolled section is 9-16 in., whereas in a built up girder of the same area of flange and depth, ¼ in. is more than sufficient. Beside, the thickness of the web of a rolled girder must increase with even a very small increase of the depth, and must, moreover, be uniform throughout the entire girder; but this is not the case with the web of the built up section. The thickness of the web of a plate girder, which is always in excess of the requirements of theory, need not be increased until the depth is nearly doubled. A few additional stiffeners are all that are necessary to give rigidity to the greater depth of the web.

In connection with the subject of the relative strength of the type of two girders under consideration of the same total weight, it must not be lost sight of that the strength of a girder of any form does not depend exclusively upon the actual sectional area of either the flanges or the web, but is due in equal measure to the observance of the proper proportions between the span, the depth, and the breadth of flange. These nice adjustments are easily insured in the case of the built up girder, but not in that of its rolled fellow. It is here that the former has an immense advantage over the latter, particularly when the dimensions of the span exceeds 20 feet. The proper theoretical ratio between the various parts of a girder cannot be observed in those of the rolled form. Hence, in comparing a rolled and a built up girder under the same conditions of loading and weight, the weight of the flanges of the latter can be decreased by increasing the depth without at the same time augmenting the weight of the girder in the same proportion. Briefly, the great difference between the two is that a built up girder can be designed so that the dictates of theory can be very closely adhered to in practices, and a rolled girder cannot. The form and proportions of a built up girder are the result of theory, those of the rolled section the result of practice. The exigencies of the manufacturing process virtually determine the relative proportions of a rolled girder. Some attempt is made to assimilate these to what theory would indicate as the correct proportions, but with very equivocal success. It is in fact not possible to roll a girder with a proper regard to these theoretical requirements.

Summing up the subject, it would appear that in the comparison we have instituted, when the span does not exceed from 10 feet to 20 feet, a rolled girder will be cheaper than a built up section, for although there may be a superfluity of metal in a part of it, yet the price per ton will be less than for built up sections. When this limit is surpassed the weight of the built up girder of the same span and depth will be slightly less than that of the rolled girder. This supposes the ratio of depth to span not to be that which is calculated to give the greatest amount of strength. If the built-up girder be correctly proportioned, so as to reduce the strains to a minimum, it will be cheaper than the riveted section for a span greater than that already alluded to. The riveting together of a couple of rolled girders longitudinally, so as to double the depth, is a handy expedient as a makeshift, but in complete defiance of all theory. The material in the two flanges, which is then concentrated in the middle of the web, is so much waste metal, since it is situated at or near the neutral axis of the whole girder, and its leverage for resisting strains is reduced to a minimum. Other ingenious combinations of rolled girders are sometimes made. For example, two or more are placed side by side and united by horizontal plates riveted over the top and bottom flanges. This arrangement possesses all the disadvantages of the old box girder, which is now obsolete. It is quite impossible to get at the inside after the plates are once put together, and the same remark applies to the combination of rolled joists with regard to the spaces between the parallel girders. While, under certain circumstances, and within certain limits, rolled girders are exceedingly well adapted for constructive purposes, and could be employed to advantage by engineers to a much greater extent than they are; yet, whenever a girder is required to fulfill certain conditions which admit of a theoretical adjustment of sectional area of strain, they will not be found economical. In a word, if a girder of small span is required to be merely adapted to a given load, one or other of the ordinary rolled sections will be found to be both convenient and economical. But if the span and load are of sufficient importance as to call for a design, the built-up girder, either rolled or open webbed, is the only proper type to adopt.—*The Engineer.*

How a Lighthouse was Built.

The mountain system of Britany has a sort of continuation in a series of reefs and igneous rocks which jut out in a broken lines westward of Finisterre. On one of these rocks, called L'Isle de Sein, there stands a lighthouse, but the real danger lies to the westward, and the rocks there have literally bristled with wrecks of vessels making for Brest. In 1869 the committee for lighting the coast of France decided to erect a lighthouse on the extreme end of the danger, and after a careful examination, M. Ploix, the consulting engineer, decided on the Armen Rock as the best site. At the same time he did not attempt to depreciate the prodigious difficulty of the task, and characterized it as "nearly impracticable." The currents are so strong and the sea runs so high that neither M. Ploix nor the other engineers, nor the director of lighthouses, was able to approach nearer than 50 feet. All they were able to ascertain was that the rock was gneiss, about eight yards across and 12 in length, and that it was just visible at low water. After settling their plan of operations, they applied to the fisherman of the neighboring island of Sein, as most familiar with the locality and the danger, to commence the necessary works. These men undertook the task, and, provided with life belts, began to watch regularly for the best opportunity of landing on the rock. As soon as they got their chance they crouched down on the rock, and clinging on with one hand, with the other worked away with a cold chisel so as to sink a sufficient number of sockets for the insertion of the iron clamps. Every now and then a wave would break over the rock, drenching them with foam and spray, and not unfrequently one of the party would be carried right off by the heavy sea, but would soon be picked up by a vessel kept purposely on the watch.

At the end of the first season (1867) seven landings had been effected and eight hours' work done, which sufficed for the sinking of fifteen sockets, while the following year the weather was more favorable, and forty new holes were pierced, some of which were below water. In 1869 the blocks of stone were first placed in iron clamps about a yard long, riveted into the sockets. The blocks were all hewn according to pattern and joined together with Parker-Medina cement. The work of dropping them into position was exceedingly laborious, owing to the violence of the sea; but two of the officials were constantly in attendance, urging on the workmen, and at the end of the season 25 blocks, each about a yard cube, had been successfully laid. In 1870 eight landings took place and eleven cubes were laid, and in 1871 as many as 23, the work by this time becoming easier as further progress was made. A steam launch is now used for the conveyance of material, and a sort of masonry scaffolding having been built, the builders have succeeded during the first half of this year's season in placing in position no less than 87 blocks. The expense, however, as may be imagined, has hitherto proved considerable. Each of the 45 holes pierced during the first two years cost upward of 2000 francs, and on December 31st last the charges had amounted to more than 189,000 francs. The light is to be a revolving one of the first order, and 97 feet above high water mark; there are to be 7 stories in the house, and there will also be a steam whistle for use in foggy weather.—*Academy.*

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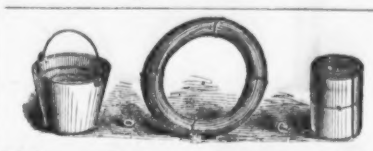

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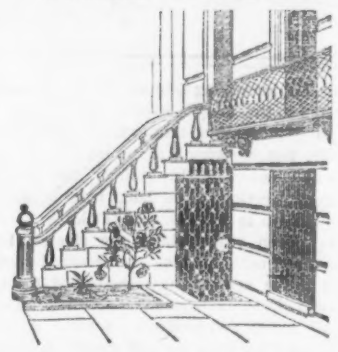

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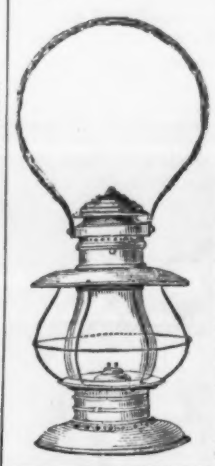

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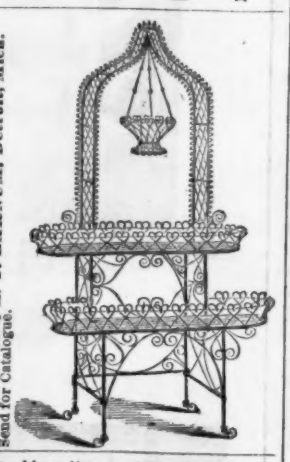

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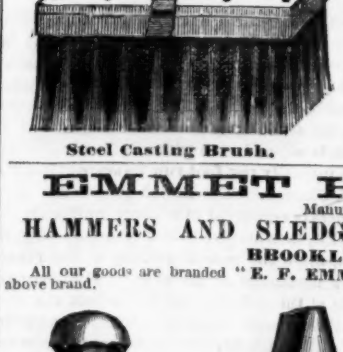

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Growth of the Iron Trade in France.

France is fairly supplied with deposits of iron ore, the eastern departments being the richest in that respect, and exporting a certain amount of ores; on the other hand the furnaces of France draw largely on the ores of Italy, Spain, and Algeria, the special qualities of which diminish the cost of fuel in smelting.

In 1865 the quantity of ore extracted in France was 3,658,464 tons, valued at 14,500,000 fr., and the quantity smelted 3,010,658 tons. In 1869 the raw ores extracted amounted to 3,466,000 tons, but the number of men employed in the mines had diminished from 13,847 to 9987, the annual production per head having grown from 264 to 347 tons, and the wages from 619 to 637 fr. Of the 42 departments producing iron ore the most important are the Moselle, the Meurthe, the Haute-Marne, and the Ardeche. The price of ore followed that of iron; the average quotations fell from 0·542 fr. to 0·426 fr. per quintal. In two departments, however, it reached 1fr. 80c. The ores are not generally found in the immediate neighborhood of the works, and in some instances they are conveyed a considerable distance. In 1865 the proprietor of the soil drew 10 per cent. of the total value of the ores, but in 1869 this tax had fallen to 6 per cent.

Since 1860, the whole of the machinery and processes employed in the iron trade have been completely modified, and improvements are still being made which exhibit much skill and scientific knowledge. The charcoal furnaces diminish every year. During the eight years which have passed since the commercial treaties have been in action, which brings us down to the present year, the charcoal furnaces are two-thirds less in number than they were, while those using mineral fuel are more numerous by one-quarter; moreover the latter have assumed much larger proportions. The change is equally remarkable with respect to the manufacture of wrought iron. From 1861 to 1869 there were but 1014 to 1111 puddling furnaces worked exclusively with coal, while the number of the old Catalan forges fell from 63 to 24; the number of refining furnaces fell during the same period from 510 to 303.

The effect of these changes was as follows: The production of charcoal pig fell from 193,928 to 112,690 tons, and that of mixed fuel pig was diminished by one-quarter, making a total reduction of 103,670 tons in five years. On the other hand, the weight of coke pig rose from 921,908 to 1,202,833 tons, so that the increase in the latter kind of pig iron surpassed the falling off in the former kinds to the extent of twice and a half. The principal departments which produced coke pig were, the Moselle, which made 348,287 tons; Saone and Loire, 122,500; Ardeche, 109,753, and the Nord 96,846, tons. The price of charcoal pig fell from 14fr. 51c. per quintal in 1865 to 13 fr. 14c. in 1869, and coke pig from 8 fr. 99c. to 7 fr. 94c. in 1868, rising again to 8 fr. 0·8c. in 1869.

The quantity of raw pig transformed by second fusion with foundry pig grew, in the five years, from 252,653 tons to 303,920 tons, while the price fell from 26 fr. 40c. to 25 fr. 56c.

It is not necessary to follow the official statement and give the details of the cost of making iron with charcoal, and charcoal and coke mixed, or coke, it is sufficient to give the result, which is that in the two former cases the cost of fabrication is 83 per cent., and in the latter 77 per cent. of the average selling price of the pig iron.

During the same period, the production of wrought iron from charcoal or mixed pig fell, respectively, 14,522 and 3976 tons, while that from coke pig rose 152,977 tons.

In consequence of the rivalry between French and foreign iron makers, the forges least advantageously situated with respect to the supply of ore and coal disappeared, and the business while increasing became concentrated around a smaller number of industrial centers, with advantage. In 1869 the Nord produced 171,869; the Moselle, 140,761 tons; the Loire, 90,148 tons; and the Saone et Loire, 81,077 tons.

The make of rails presents important results. In 1865 the quantity produced reached 208,786 tons, of the value of 40,568,410 fr., but fell during the three following years to 186,028 tons, of the value of 34,656,643 fr., rising again in 1869 to 216,628 tons, of the value of 41,704,738 fr., the extreme prices being 19 fr. 43c. in 1865, and 18 fr. 13c. in 1867.

The manufacture of iron with mineral fuel reached, during the period in question, to 760,899 tons, valued at 160,000,000 and a few thousand francs, and required 1,426,146 tons of coal at 15 fr., and 1486 tons of coke at 23 fr.; thus each ton of iron, of the average value of 210 fr. 3c., required in its production 187 kilos. of coal and 2 kilos. of coke, worth together 2 fr. 81c., which shows that the cost of fuel for wrought iron made from coke pig did not exceed 14 per cent. of the value of the iron produced. In the old Catalan method, in which the whole cost of producing pig was avoided, the cost of the fuel used was not less than 58 per cent. of the value of the iron produced.

The quantity of sheet iron produced did not vary much; it amounted in 1805 to 100,915 tons, of the value of rather more than 36,000,000 fr., and in 1869 to 107,441 tons, valued at nearly 14,500,000 fr.

The production of iron wire fluctuated considerably; it amounted to 43,000 tons in 1865, 63,000 tons in 1868, and 56,000 tons in 1869. Its price did not vary more than 2 per cent. during the period.

The production of iron from charcoal pig remained stationary at about 100,000 tons from 1819 to 1860, falling rapidly afterward, as already shown. The production of iron from coke pig commenced in 1842, when the first rails were also made; in 1854 it had reached 400,000 tons, then remained stationary until 1860, and afterward rose gradually to 850,000 tons in 1869.

The production of steel by the refining process in the low furnace fell from 2217 tons in 1865 to 1331 tons in 1869. Puddled steel in the same period rose from 17,634 to 24,861 tons, but the progress in Bessemer steel was still more striking the amount having grown from 9647 to 70,130 tons. Cemented steel fell from 11,000 tons in 1862 to 5000 or 6000. The demand for cast steel is in like manner diminishing; in 1869 the quantity made reached 7610 tons.

Taking into account all kinds of steel, except cast, which is a secondary production, the fabrication of cemented steel has quadrupled in 43 years, and that of puddled and Bessemer steel has multiplied 50 times.—*Iron.*

Answers to Correspondents.

R. A. T., Beaver Falls, Pa., writes: Will you give me your opinion on the use of zinc in cooking utensils, as now put on by immersion in the molten metal. Is pure zinc injurious to health if used to boil vegetables in?

Answer.—Zinc is not a metal which can safely be used for the lining of cooking utensils. In its pure metallic state, zinc is not poisonous, but several of its compounds are prejudicial to health or fatal to life, according to the quantity taken into the system. The zinc of commerce, which is seldom pure, and often contains both lead and arsenic, forms various unwholesome compounds when subjected to the action of acid and heat. Many of the vegetable acids are very powerful in their action on metals, and zinc, even when pure, is but little calculated to resist their corroding action. In any acid, when iron is present, zinc becomes the sacrificial metal and is dissolved, thus setting up galvanic action, by the aid of which any acid, and even a solution of common salt in water, will attack it and eat it away with greater or less rapidity, according to circumstances. There are so many vegetable acids which are so complex in themselves and in their reactions, that we cannot here enter upon a consideration of the compounds which zinc would form under the circumstances indicated by our correspondent. Tin, though not entirely free from these objections, is altogether a safer metal than zinc as an inside coating for cooking utensils, and in some respects better even than vitreous enamel. While the enamel lasts, it is probably the best substance which can be employed for this purpose, but it cracks with the contraction and expansion of the metal to which it adheres, and these cracks become filled with matter which cannot fail, in time, to render unwholesome whatever is brought into contact with it during the operation of cooking. With recent progress in the manufacture of enamels, we seem to be approaching a degree of perfection in the art which will give us a substance both elastic and insoluble, and which will answer this purpose admirably.

John Penn.

Toward the close of the last century the first John Penn was working for Messrs. Hall, the engineers of Dartford, and whose establishment is still in vigorous life. John Penn had something more than ordinary human clay in his composition. The records of Messrs. J. and E. Hall, to whom reference has just been made, demonstrate that their young workman, Penn, beside being an excellent mechanic, was studious and thoughtful, beyond his years. Undoubtedly he very early discovered that one's truest friend, materially speaking, may be carried in one's own pocket. "Put money in thy purse," said Shakespeare, and young Penn complied, as far as he could, with the mandate; in fact, whilst working at Dartford he paid his way, and saved a few pounds into the bargain. The ambition to become master, instead of man, had taken possession of his mind; and although, by no means penurious, he was wisely careful. At the commencement of the present century John Penn bade adieu to Dartford, and having heard of a "village smithy" to be let at, or rather near to, Greenwich, he become its tenant. At that period Penn's forge was surrounded by the country seats of city merchants, and the gardens pertaining thereto. The young smith found employment for his head in devising heating apparatuses for the conservatories of his wealthier neighbors, and employment for his hands in constructing and setting them to work. Soon his diligence and skill met their reward; he obtained a small contract for the supply of biscuit baking apparatuses in the Royal Victualling Yard at Deptford. Financially he was assisted in this venture by friends who knew his ability and honesty of purpose. This contract was the real starting point of the subsequent success which he achieved. The smithy was transformed into an engineering workshop, and it was supplied with such rude mechanical appliances as were then available. Little by little the factory, at the junction of Lewisham road with Blackheath Hill, grew and extended itself. Gardens disappeared, and sheds and buildings arose on their sites. The nucleus of the gigantic establishment which now exists in the same locality, and which has monopolized about seven acres of original garden ground, was thus securely completed. Penn became associated with the engineering notabilities of the time, and obtained a large share in the works of which the first half of the current century saw the advent. He, in fact, was a thriving man, and on one occasion—under the *ægis* of the celebrated William Cobbett—he offered himself as a candidate for a seat in Parliament for the borough of Greenwich. His efforts were unsuccessful, perhaps because of the extremely liberal or advanced views of his friend and patron Cobbett. This parliamentary campaign was engaged in after the passing of the Reform Bill of 1832. Nearly thirty years before that period Penn had married, and about 1810 his son, the present distinguished and universally respected head of the firm, was born. Fortunately, the son had all the mechanical and scientific proclivities of his father. He had also to commence with a better scholastic training. At an early age the fine arts were cultivated by the young engineer, and had he not, by force of circumstances, come to wield the hammer and ply the jack-plane, he might have figured as a Royal Academian in place of being a civil engineer. Mr. Penn determined to work, as his father had done, with his own hands, and, indeed, to pass through the noviciate of an ordinary apprentice. He had no faith in mere paper engineering; thus to a very great extent may be attributed the success which has constantly attended upon the firm from the date of its foundation.—*London Iron Trade Exchange.*

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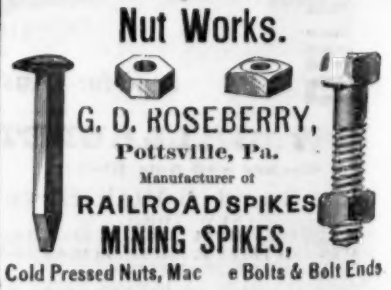
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Improved Adjustable Clamp.

Messrs. Hammer & Co., of Branford, Conn., are introducing the clamp shown in the accompanying illustration.

This is one of those simple and yet very effective little devices which is sure to meet with a ready application from all having occasion for its use. The shape, clearly shown in the annexed engraving, is such as to insure strength, stiffness, and convenience in handling, and the material used is malleable iron. The socket on the upper extremity of the frame is threaded to receive a screw, A. Through the latter passes the clamping rod, B, along the sides of which are cast a series of projections, as shown at C. These enter grooves at the side of the rod orifice through the screw, so that the rod may be moved up and down through the latter with ease. In use, however, the object to be clamped is placed between the frame and the enlarged lower end of the rod. The latter is then pushed down against the object and turned to the right. The projections, C, then enter notches made along the sides of the grooves in the screw, and consequently carry the latter around with the rod, thereby forcing the same tightly down upon the work. The sectional view, Fig. 2, will render the arrangement of grooves and projections clearly understood. A quarter turn to the left disengages the projections on the rod from the notches, so that the rod can at once be drawn back.

It is unnecessary to point out the advantages resulting in saving of time in turning down screws, as well as the firmness with which the clamp holds its work. The invention is made in various sizes, and is, of course, applicable to a variety of uses, by cabinet makers, carpenters and others. A vise for wood workers' use has also been introduced, we understand, constructed on the same principle. The present invention is sold by the trade.

Fig. 1

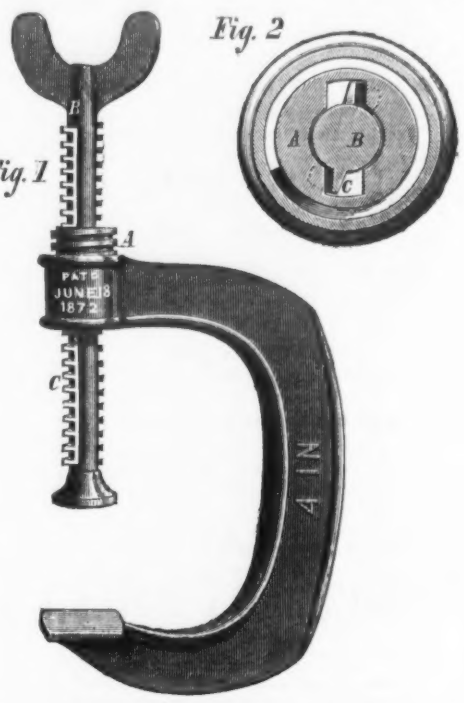

Fig. 2

Industrial Co-operation.

We take the following from the London *Mining Journal:*

This is a phrase easily written, but it is one susceptible of many meanings, and one which will convey different ideas to different minds. We only propose now, however, to refer to that idea which has brought about co-operative engine works, co-operative mines, and not a few other enterprises of a cognate nature. Many a learned chapter, from the days of Adam Smith downward, has been written on the relations of capital and labor to each other. Divers have been the theories elaborated on the subject, but no political economist has ever yet held that the one can exist without the other. Any system which does not award to each its just rights is faulty; and some—as, for instance, communism—are simply tyrannical and dishonest. All the difficulties of legislation in these days of freedom which have been, and which remain to be, encountered arise from attempts on the one side or the other to make labor the slave of capital, or *vice versa*. Half the wars in the world from the very beginning have been attempts to obtain by the conqueror the labor of the conquered; and the old maxim, *væ victis*, meant as much as anything slave labor. Co-operation, on the other hand, means the investment of labor with capital. Thoughtful working men have discovered that capital has the same right to be protected as labor, and that it is only by their union that satisfactory results can be obtained for all. Out of their cogitations came the idea of co-operation. At first it was tried only in the matter of shop keeping, and the idea was that of an unlimited partnership. It did not succeed, except in a few cases, where the constituents were numerous and the district prosperous. At length the principle began to assume a more definite form—to be tabulated, as it were. And it took this form, that the consumers being able to produce the custom without which no trade can exist, should furnish their own supplies. This principle has proved wonderfully successful in divers retail undertakings, particularly in Halifax, Rochdale, Oldham, and other densely populated towns in Lancashire. The men who originated—or those who latterly have been at the helm—are persons to whom it would be no exaggeration to attribute great financial genius, so ingenious and so satisfactory are the arrangements in which the profits are divided between consumers and capitalists.

It is obvious, however, that when capital, generally in small amounts, came to be applied to productive works—to manufactures and productions of various kinds which must compete with what may be called single handed capital—difficulties must arise. The main spring of co-operation is the principle of making the workmen employers as well as employed, and so giving them an ever-increasing and direct pecuniary and personal interest in the work done. This is effected by each worker leaving a definite proportion of his earnings to become share capital, and although he may increase his stake by bringing in any former savings he might have accumulated, no one is allowed to lessen his capital. One of these concerns, of which there are now a good many in the North of England, is the Ouseburn Engine Works Company, New-Castle-on-Tyne. It arose three years ago out of a strike, but at the annual meeting last week the chairman Dr. Rutherford, said that its object was to solve the great problem of how to join capital and labor and prevent strikes. He complained of unfair competition on the part of other manufacturers, and of "a deliberate and systematic attempt to shut them out of the market for material," in consequence of which they had for a long time great difficulty in procuring coal and iron to supply their wants. It appears, too, that they had been hindred by a strike amongst themselves, and a revolt of their boiler makers had produced a loss of profits to divide which the chairman estimated at £5000 or £6000. In spite of all these difficulties he congratulated the shareholders—that is, the workmen.—on having made their mark in the engineering world, and pointed with pride to the success of the engines they had put into the screw steamers Vandertælen and the Ly-ee-moon, both of which had made most successful trial trips, the latter on the Thames, and combined a smoothness of working with a minimum consumption of fuel quite unusual. The report was adopted with unanimity, but this brotherhood of labor appears to possess no immunity against aggreived shareholders, and there was a considerable squabble over the election of a new director. The difficulty, however, was surmounted without going to a poll, the chairman was re-elected, and the proceedings terminated with a vote of confidence in that gentleman.

Chattanooga Iron Items.

The Chattanooga *Commercial* says: Chattanooga has in operation three large manufacturing establishments with an aggregate capital of $1,470,000. The Roane Iron Company manufactures rails and pig iron, the product last year being 11,000 tons of rails and 7500 tons of pig iron. The rail mill run two-thirds time—full capacity at present 24,000 tons Present production of pig iron 1000 tons per month.

The Vulcan Iron Works manufacture bar and strap iron, car axles, railroad supplies, nuts, bolts, etc. Yearly capacity 15,000 tons.

The Chattanooga Foundry and Machine Works manufacture stationary and portable engines, boilers, locomotives and all kinds of mining machinery. It is probably the largest and completest establishment of the kind in the South.

In addition to these three are the smaller, but not less busy or useful machine works of Truxall & Dunmeyer, and the Novelty Works.

There are in course of construction the Wasson Car Works, capacity, four cars and 200 car wheels per day, and a blast furnace by the Chattanooga Iron Company, with a capital respectively of $200,000 and $100,000 each. They will be ready to commence operations within a few months.

The proprietor of the Athens Foundry and Machine Works has purchased ground, and contemplates removing his establishment to this point in the spring.

American Coal Production.—The total production of anthracite in 1873 was twenty-two and three-quarter million of tons, of which about three and a quarter million tons were consumed in the coal regions, leaving nineteen and a half millions for the market. The demand is estimated to increase annually ten per cent., and taking a series of years together it does increase that much. What it falls short in any one year is usually made up by excess of the estimate the next year following. There is no reason to doubt that there will be market for twenty millions of tons in 1874. What may be new to many of our readers is that the bituminous coal production is equal to, if not in excess of, that of anthracite. It last year amounted to 22,585,000 tons, and the production of both kinds for the year to 45,413,340 tons. The total of foreign coal imported during the year was less than half a million of tons, and the amount exported was but about 100,000 tons in excess of the imports. Should the annual increase in the production of anthracite and bituminous coal in the next ten years equal that of the last ten years, the production to be marketed for consumption in 1883 will reach the enormous aggregate of 95,000,000 tons. And there is no reason furnished in the past history of the trade, either here or in England, to doubt that it will so increase. With such an increase in the production of coal, how do the present facilities for marketing it stand in comparison? Those who sometimes express fears that the coal carrying companies are laying out too largely in the future in this business, may be perhaps somewhat assured in contemplating the existing situation, and comparing it with so near a future as only ten years.—*Philadelphia Ledger.*

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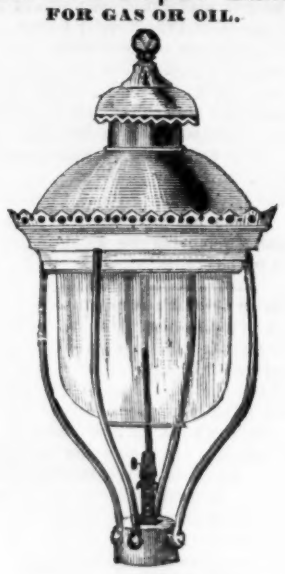

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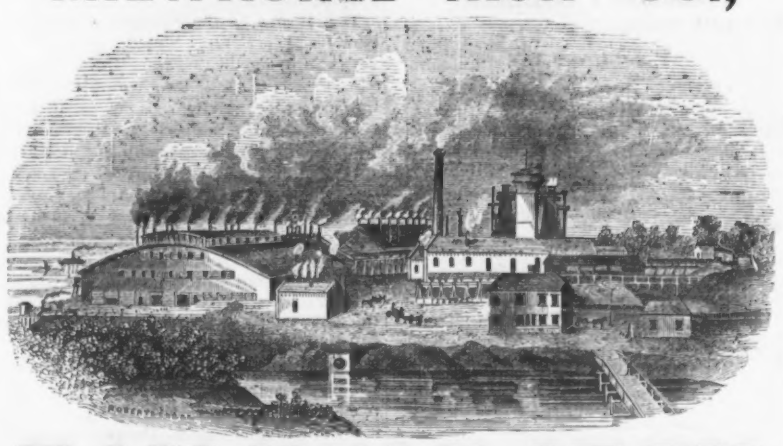

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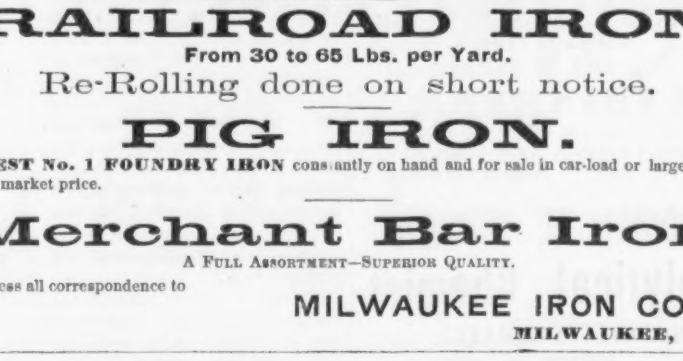

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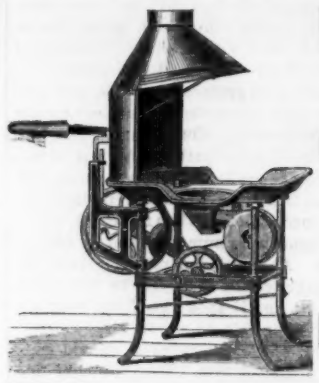

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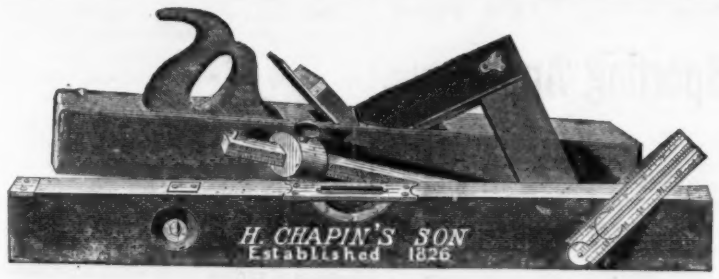

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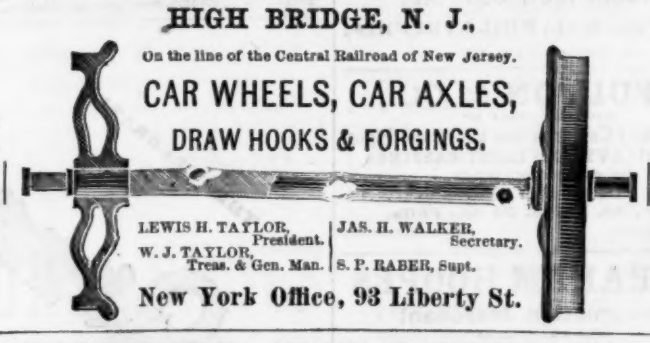

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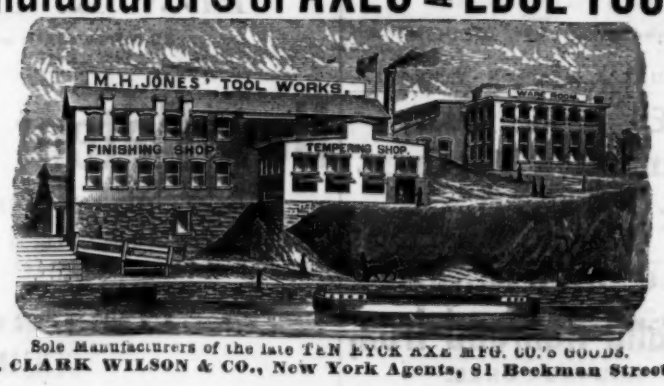

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Cast Iron Bridge over the Allier at Vichy.

We condense the following from a translation published in the *Engineer* of a paper by M. Radoult Delafosse, originally published in the *Annales des Ponts et Chaussees:*

The new bridge at Vichy was built in 1868-'70 to replace a suspension bridge partly destroyed by a flood in September, 1866. The superstructure consists of cast iron arches, and the foundations were laid within iron caisons by means of compressed air. In the investigations connected with these foundations lies the chief interest of the paper.

1. The bridge is designed to carry the road between the towns of Vichy and Aunat across the river Allier. It takes the place of two suspension bridges crossing separate branches of the Allier, and having a causeway between them. The principal data for the construction were as follows: Total length of the bridge, 232m.; width of road (including footways), 6·60m.; hight of road above low water mark 8·06m.; number of intermediate piers, from four to eight. The necessity of making the piers as small as possible, arising from the very treacherous character of the bed of the Allier, led to the adoption of iron for the superstructure. Leaving on one side the question of foundations, the choice lay between cast iron arches and wrought iron arches and girders. An investigation showed that the type of cast iron bridge with two arches introduced by M. Georges Martin was the most satisfactory on the score of economy; and as it was considered to possess numerous other advantages, it was naturally adopted.

The bridge has six spans, each of 37m. The piers and abutments are in masonry, and have the following dimension at the springing of the arches: Piers, 2·70m. by 6·30m; abutments, 6·75m. by 6·20m. The upper part of the footings is on a level with low water. The hight of the lowest part of the springing above the footings is 3·21m.; that of the soffit of the arches above the same point is 6·91m.; and that of the surface of the roadway 8·05m. The rise of the arches is thus 3·70m., or one tenth of the span, while their distance apart, out to out, is 5·14m. The piers are founded on caissons of plate iron, rectangular in shape, but rounded at the angles, having a length of 10·10m. and a width of 3·90m. The abutments are founded on similar caissons, 7·30m. long by the same in breadth.

The right abutment is placed at a distance of 10m. from the foot of a dyke protecting the town of Vichy from the floods of the Allier. The foundations of the old suspension bridge were deeply sunk in this dyke, and as it was not thought prudent either to disturb them or to build the abutment upon them, it was carried out into the waterway, and the interval between the two was spanned by a semicircular arch of masonry. The stone used was principally limestone of the district. A basaltic stone was employed for the skewbacks of the arches, and for corbels, stringcourses, and other ornamental work. The lime used both in the foundations and in the work above was that from the limestone beds of Vernet, near Vichy. This lime is moderately hydraulic, takes a considerable time in slacking, and hardens very slowly. With time and care it gives good results, but could not be used where rapid hardening was required. In the erection of the masonry, the only noteworthy point was the mode of consolidating the plinths and parapets, which were corbelled out from the face of the piers and abutments. The corbel stones were held down to the general masonry by iron bolts 0·03m. in diameter and 1·26m. long. These bolts had at each end a ring through which was passed a round bar 0·03m. in diameter. The one bar was solidly bedded between the surface of the corbel and the bed of the plinth, whilst the other was buried in the masonry 1·26m. below. The stones of the parapet, were, fastened together by oak dowels 0·09m. square, and penetrating the same distance into the stone. These were made of perfectly dry wood, and were kept in boiling oil for some time previous to their use. The parapets were, beside, fastened to the plinth by small iron dowels bedded in the surface of the plinth, and in the lateral joint of the parapet stones, and run in with lead. This corbelling out of the parapet was suggested by a similar principle being adopted for the iron superstructure. It has, moreover, the advantage of reducing the amount of masonry, and especially in the dimensions of the foundation caissons. It may, therefore, be recommended as an essentially economical system. With regard to the superstructure, the depth of the arches was fixed at 1m. throughout. Each is formed of nine equal voussoirs, whose transverse section is that of a web 16mm. thick, with a rib top and bottom. The voussoirs are fastened together by bolts passing through flanges at the joints. They rest on the skewbacks by the intervention of cast iron filling pieces bolted to them, and having wrought iron wedges to regulate the pressure. The spandrils are composed of trapezoidal open castings, the vertical struts of which are exactly over the joints of the voussoirs. These castings are bolted to the upper rib of the arches, and kept in the vertical position by means of the horizontal bracing of the bridge. The roadway rests on small arches of brick in cement 0·13m. in thickness, supported by rolled iron cross girders 0·35m. in depth, and placed 1m. apart center to center. These cross girders are united to the arches and spandrils by means of socket pieces cast upon the latter, in which the cross girders are solidly bedded by means of iron keys and of a mixture composed of sal-ammoniac, sulphur and iron filings. Its composition is as follows: Iron filings, 6 lb.; sal-ammoniac, 2 oz.; sulphur, 4 oz.; water, 10 oz. A considerable quantity of heat is disengaged during the mixing. This composition has the property of hardening very quickly, and of incorporating itself with the different parts of the joint. For further security the cross girders are bolted to the ribs of the arches and spandrils. The arches are covered by a layer of cement 0·025m. in thickness. The rain water is carried off by small earthern pipes placed at the intersection of the arches, and also by paved gutters, one on each side of the roadway, leading to cast iron spouts spaced 9m. to 10m. apart. With regard to the horizontal bracing, the method described above for the bearings of the cross girders was adopted to unite all the other pieces of the cross bracing, either to one another or to the arches and spandrils. The solidity of the joints thus formed appears very satisfactory, and is certainly far superior to that of joints made by means of rivets alone. The arches of the same span are braced together at their upper part by four large cast iron cross beams laid horizontally. These cross beams are in the form of a rectangular frame strengthened by horizontal struts, which multiply the points of attachment and give great stiffness to the whole system. The arches are also united by twelve wrought iron cross beams at their lower part. This system of bracing is completed by four horizontal wrought iron cross beams, which join the middle parts of the spandrils, by vertical cross beams, also of wrought iron, in the form of a St. Andrew's cross, and finally by two longitudinal ties running under the cross girders. The footways, each 1m. wide, are carried on brackets, and are formed of cast iron plates, of which the upper surface is suitably hollowed out to receive a bed of mortar 35mm. thick, covered by a layer of bitumen. The brackets are of cast iron, projecting to a distance of 0·87m., and are placed 2m. apart, center to center.

The system of foundations employed is more particularly described in the second part. The principal dimensions of the caissons which support the masonry of the piers and abutments are here given. These caissons consist of two distinct parts, the working chamber and the upper casing; the working chamber is 2·20m. in hight, it has sides 7mm. thick, and a roof of the same thickness, riveted to strong outside cross girders, spaced at distances varying from 0·98m. to 1·14m. These cross girders are in the same plane with inclined struts placed in the inside of the chamber, and reaching from the bottom to the roof, so as to form a connection between the sides and the top. The cross girders and struts are of plate 6mm. thick, with ribs of angle iron 5 to 7 centimetres wide. Finally, horizontal struts are placed at the bottom and half way up the chamber, to keep apart the opposite sides. The upper casing is especially intended to protect the fresh masonry against the immediate contact of the soil during the descent of the caisson. It is formed of sheet iron 4mm. thick, riveted together, and strengthened horizontally by butt-plates and angle irons. From its floor rise two tubes having an internal diameter of 0·84m., which preserve communication between the working chamber and the upper air by means of air locks.

Among the contrivances connected with these caissons is an ingenious iron "drawer," as it may be called, designed for the removal of the excavated earth from the working chamber. This consists of a rectangular cast iron box having a partition in the middle of its length, and a round opening in the top at each end. This box moves within a rectangular casting partly penetrating within the air lock and partly extending on either side of it. In the top of each of these extended parts is an opening similar to that in the top of the drawer; the part of this casting within the air lock is covered by a friction plate, making an air tight joint with the edges of the drawer, and with faced level rims raised round the openings. In the middle of this friction plate is an opening communicating with the air lock. At each end of the drawer is placed a bucket to receive the earth excavated in the working chamber. This earth is raised in a skip to the level of the air lock and is then shovelled into the right hand bucket through the aperture in the casting and that in the drawer, which is then immediately below it. As soon as the bucket is filled the drawer is pulled to the other end of the casting, when the right hand bucket will be open to the interior of the air lock, and the left hand bucket to the compressed air of the working chamber. During this movement all passage of air from one-half of the drawer to the other is prevented by the friction plate sealing up the only two openings in the drawer. The right hand bucket is now lifted away, emptied and replaced, while the filling of the left hand one is proceeding. As soon as this is completed the reverse motion takes place, the left hand bucket is emptied and the right hand one is refilled. This to and fro movement is given by draw-bars, united by handles. The drawer rolls on two rails by means of small wheels, carried on side frames. Stop pieces prevent the drawer from moving too far, and screws are employed to regulate the pressure of the friction plate upon the top of the drawer. This machine is said to have worked with great regularity and success. Its advantage, obviously, is that it dispenses with an immense deal of locking through the air lock, thus effecting a great saving of time, and producing very economical results. The description of this machine concludes the first part of the paper.

(2) The bed of the Allier is in general formed first of a thin layer of sand and small gravel, and below this of a bed of variable thickness, composed of compact gravel mixed with pebbles. This second bed is extremely hard. It is impossible to drive piles into it to a greater depth than from 3½m. to 4m.; but at the same time it is quite capable of being undermined by floods to a greater depth than this. It rests on a bottom of marl mingled with clay. At Vichy the thickness of the two upper beds under the low water channel varies from 4m. to 5m. Below these comes a layer of clay some centimetres thick, and then a bed of homogeneous marl whose thickness is unknown. According to observation, the gravel beds are capable of being completely undermined, but the erosions in the marl are only to a limited depth, about 60 to 70 centimetres. It was necessary then for the complete security of the foundations either to bury them deep in the marl, or else simply to lay them on that bed, suitably levelled, protecting them at the same time by masses of stone deposited round them. In either case, various methods might have been adopted for laying the foundations, which will be considered further on. The details are now given of the method actually employed. The caissons were erected in place on staging of the ordinary kind. Once erected they were suspended by chains from four screws placed on the upper platform of the staging. Their sinking into place then began and went on with perfect regularity, in spite of stones and fragments of wood which were met with in considerable quantities at from 4m. to 5m. below low water. In addition to their suspension by the chains, the caissons were kept in place by the lower framework of the staging, against which they bore as they descended. Their position was also fixed every day with reference to bench marks on both banks, and, thanks to these precautions, the greatest deviation recorded was not more than 12 centimetres. The mode of excavation, says M. Radoult Delafosse, was somewhat unusual. In general, the spoil is brought up through a central tube, by means of a bucket dredge whose ladder is placed in the axis of this tube; and it is only when the caisson has come down to its place that the dredge is withdrawn, and an air lock fixed at the top of the tube, in order to allow the working chamber to be filled up with masonry. This system is no doubt the best with a soft, homogeneous earth, and where there is no fear of meeting with fragments of stone or wood embedded in the soil. At Vichy the hardness of the ground would have occasioned great difficulty in dredging, whilst it would have been necessary to replace the dredge by an air lock whenever any considerable piece of wood or stone came under the cutting edge of the caisson. The raising of the spoil was, therefore, carried on through the two side tubes, and its withdrawal was generally effected by means of the "drawer" described above. It has thus been established that this method allows the greatest regularity in the carrying on of the work, and is, moreover, in almost all cases, as expeditious as the raising of the spoil in the open air. During the sinking of the caisson the masonry in the upper part was carried on in the open air, the upper casing serving as a coffer dam. The progress of the work was so regulated that the weight of masonry executed produced a regular rate of sinking in the caisson. This masonry consisted of a shell of faced rubble stone round the whole interior of the caisson, with an internal core of concrete. It was intended originally that the upper casing of the caisson should be filled in entirely with concrete, surmounted by a layer of rubble masonry 2m. thick; but during the execution of the work it was judged wiser to build the ring of rubble masonry at the outside, in order to present a firmer surface hereafter, should the iron casing be partially destroyed by rust and by the friction of pebbles in time of flood. As each caisson sank to its proper level, and the excavation came to an end, the filling in of the working chamber was proceeded with. This was done in concrete, working from bottom and sides of the caisson toward the roof and the orifices of the tubes, which were finally closed by means of a metal plug and of wedge shaped stones driven in with the sledge. As soon as this filling in was completed the two tubes were withdrawn, the space they occupied filled in with concrete, and the footings were then laid under the protection of the movable parapet of the caisson, which was afterward withdrawn. The total depth to which the caissons were sunk was 7m. below low water. They were then embedded in the compact marl to a depth varying from 2·30m. to 3·30m., or in the worst case, equal to the full height of the working chamber.

The time occupied in the erection of each pier and abutment is given by M. Delafosse in full detail. It appears that the time taken in erecting the caissons was, on the average, forty days for a pile and fifty for an abutment. The average rate of sinking for the caissons was 33 centimetres per day in the gravel, and 24 centimetres in the marl.

We may here state that during the progress of the works, a series of experiments was made on the strength of mortar made in compressed air, as compared with that made under ordinary circumstances. The mortar used for the foundations of the Vichy Bridge was composed of two parts sand from the Allier, and one part well slaked Vernet lime. This lime, as stated above, is moderately hydraulic, and hardens very slowly. To give a fair comparison the experiments were made under exactly the same conditions as those which existed during the sinking of the caissons. The time employed in filling up the working chamber was, on the average, ninety-six hours. Hence, the concrete used for this purpose remained during that time in the dry under the pressure of the compressed air. When the filling was complete, the concrete became exposed to the water under the ordinary atmospheric pressure, to which was added the weight of a column of water 6m. to 7m. in hight. To approach as nearly as possible to these conditions, twenty bars of mortar were prepared, 30 centimetres long and 10 centimetres square in section. These bars were run in boxes made to these dimensions, but having two cleats nailed to them 7 centimetres apart, so as to reduce the dimensions in the middle by 3 centimetres. An iron spindle was placed in each end of the bar when fresh to facilitate their being eventually broken. Of these bars ten were kept for six weeks in the working chambers of different caissons. They were dry for the first ninety-six hours, and under water for the rest of the time. After the six weeks they were kept at the surface, but always in water. The other ten specimens were kept at the surface—first, for ninety-six hours in the dry, and afterward under water until they were broken, which was not till three months afterward. The breaking was effected by suspending the bar from one spindle and attaching the weight to the other. For this purpose dry sand was used, being poured a little at a time into a sack hung on the lower spindle. By this method of proceeding there could be no difference between the first series of bars and the mortar in the working chambers, except that the pressure sustained by the latter when in water was in reality somewhat less than that sustained by the bars during the first six weeks:

Mortar, where kept.	Breaking weight per sq. centimetre. Kilogrammes.	Average.
In compressed air..	1·737	
do. ..	1·678	1·84
do. ..	2·093	
do. ..	1·850	
Under atmospheric pressure.....	1·568	
do.	1·297	1·37
do.	1·265	
do.	1·359	

The broken pieces from these experiments were kept in water under atmospheric pressure for three months more, and were then broken in the same manner. The results were as follows:

Mortar, where kept.	Breaking weight per sq. centimetre. Kilogrammes.	Average.
In compressed air..	2·778	
do. ..	2·857	
do. ..	2·976	2·888
do. ..	3·095	
do. ..	3·000	
do. ..	2·360	
Under atmospheric pressure.....	2·381	
do.	2·133	
do.	1·952	
do.	1·952	2·247
do.	2·480	
do.	2·489	
do.	2·333	

These two sets of experiments exhibit a complete agreement, and seem to establish beyond a doubt that mortar made in compressed air is in no way inferior but rather superior to that made under ordinary circumstances.

The expense of constructing the foundation was ascertained with great care, and is given at considerable length. Only the more important items will here be specified. The total cost of the foundations up to the top of the footings was, it appears, 248,789f., the total cost of a pier being 31,513f., and of an abutment 49,606f. The value of the plant employed was about 100,000f.; 20 per cent. of this sum is allowed for rent and depreciation. The temporary bridge consisted of 102 cube metres of fir timber. Taking the expenses of erection, demolition, &c., and allowing 50f. per cube metre for waste and depreciation of timber, the total cost of this bridge was 13,001f. The stagings were three in number, one for the abutments and two for the piers; when their work was done in one place they were shifted to another The total cost of these, allowing as before 50f. per cube metre for waste and depreciation, was 10,097f. The weight of iron in the caissons was 153,100 kilos., and taking 45c. per kilo. as its value delivered, the cost amounted to 68,895f. The total cost of erection was 18,947f. The cost of sinking the caissons was 50,427f., or 24·87f. in the gravel and 31·35f. in the marl per cube metre excavated. In this cost are included the special expenses in removing pieces of stone and timber, which amounted to 3272f. The cost of the concrete for filling in the working chamber was 11·04f. per metre cube as delivered. To this must be added 2·51f. per metre cube for laying and ramming in the working chamber, and 3·61f. for rent and maintenance of plant, making the whole cost of filling the working chambers 17·16f. per metre cube. The cost of the masonry above the working chamber was 13·63f. per metre cube. From these figures it appears that the total cost—everything included—of the foundations up to low water was 112·50f. per metre cube of masonry.

BUSINESS ITEMS.

NEW YORK.

The puddling mill of the Rome Iron Works will soon be started. Work in the rail mill was resumed October 29. The directors have decided to run the mill all winter and pile the rails in the yard, if the employes will consent to a reduction of wages. This action is solely taken in the interest of the employes, as there is no immediate prospect of selling the rails made.

The Schenectady Locomotive Works have resumed work with a small force.

PENNSYLVANIA.

The puddle mills of the Valentine Iron Works, Williamsport, will start up in a few weeks.

Mr. Houston Hay, of Coshocton, has purchased the Coshocton Iron and Steel Works at that place, paying therefor a little over $3000, or about two-thirds the appraisment value.

The Allegheny Car and Transportation Company has erected new brick buildings to replace the wooden ones destroyed by fire last spring. The machinery has all been replaced or rebuilt, and the company is ready to start.

John Roach has over two thousand men employed in his yard at Chester, in this State, on the keels of three new iron steamships.

It is stated that the Warwick Iron Company, of Pottstown, are to erect a blast furnace near the western part of that town, and will soon commence operations.

The new furnace at Freemansburgh, known as the Northampton Iron Works, has been leased by the Bethlehem Iron Company.

The Pittsburgh and McKeesport Car Company has bought land at McKean Station, a mile from McKeesport, and purposes moving its shops to that point.

The new rolling mill in course of erection by Messrs. Van de Sande & Capp, at Lebanon, is almost finished.

MASSACHUSETTS.

The National Machine Needle Company, of Springfield, are now producing 325,000 needles per month, and are 200,000 behind their orders. They have recently introduced an automatic machine, which takes the long wire and carries it through all the steps preliminary to grooving the needles; the company will add them and other machinery, so as to increase their production from 25,000 to 50,000 per month, until they can meet all their orders. It is probable, also, that before long the company will also undertake the manufacture of hand needles. The annual importation of these amounts to $3,000,000, and their production would seem to offer a promising field for American enterprise and capital.

The Lowell Foundry has recently finished two Swain turbine wheels, of 72 inches diameter, for the Boott mill, at Lowell, and the Lock and Canal Company have built a canal at their own expense, at a cost of $2500, to test them. Their decision has not been announced, but it is expected that over 83 per cent. will be allowed. This foundry has just run what is claimed to be one of the largest castings ever made, in a 30 ton cupola. There were 21½ tons of metal in one piece. The same company have completed the castings of the bed pieces for the 10-ton steam hammer of the Nashua Iron and Steel Company. There are four pieces, the first of which weighs 36,220 pounds, the second 32,880 pounds, the third 39,530 pounds, and the fourth 33,860 pounds. This hammer is of Philadelphia make, 11 feet stroke, two strokes per minute.

The Douglas Axe Company, at East Douglas, have just received two heavy orders for their goods from Norway and South America, both of which call for over 10,000 axes, and the trip hammers are running from early morning until evening. Their productions have gained a very wide reputation, and are destined to be scattered all over the world or, at least, wherever civilization exists.

The contract for the brick work on Hayden, Gere & Co.'s brass foundry, at Haydenville, has been awarded to Henry Sampson, of that village, and work has already commenced.

Messrs. Stetson & Talbot, manufacturers of shoe nails and tacks, at Holliston, recently put a new 30 horse-power vertical engine into their factory. They employ about 30 men.

CONNECTICUT.

The Bradley & Hubbard Works, at Meriden, will begin work at once on a Russian order for ten fifty light chandeliers of solid brass, heavily gold plated. Each will weigh one thousand pounds, by forty-five feet long, and have a spread of twelve feet, and will cost about $2000. Numerous corresponding brackets also accompany the order, which, it is said, is designed for the Royal Palace, St. Petersburg.

There is great activity at present in the Woodruff Iron Works, of Hartford, which are running 15 hours a day, and finishing up a pair of marine engines for the Navy Department, some portions of which were shipped this week. It is a creditable piece of work, and highly commended by government officials and mechanics. Beside this they are doing a large amount of mill work and general jobbing. Among other things they are altering one of the immense steam presses used by the Cunard Steamship Company in compressing cotton for shipment, and increasing its power by putting in a new cylinder 51 inches diameter and 7 foot stroke. They have a prospect of a large amount of work for the coming winter.

The Birmingham Iron Foundry is closed for an indefinite period.

The Meridan Malleable Iron Company employ 250 hands, and ship one hundred barrels of manufactured stock daily.

The Meriden Britannia Company will soon run their works night and day.

OHIO.

The Cleveland Rolling Mill Company is using a valuable improvement for blooming steel ingots, which are bloomed faster than they can be put through the mill. They are not hammered but rolled, all four sides being subjected to pressure, at the same time making them much more perfect than those made in the old way. This is a labor-saving machine, and is worked by a man and boy, who do the work which heretofore took ten men to accomplish.

The works of the Buckeye Bridge & Boiler Company, at Cleveland, have been running through the dull season, and at present are very actively employed, making some very large boilers and oil tanks for parties in various States. At present they have 400 hands at work.

The Ironton Iron & Steel Company are getting ready to run their sheet mill on double turn.

The plate mill at Swift's Iron & Steel Works, Cincinnati, resumed operations last week.

The stacks of the Williston Furnace, Jackson, are up, and the furnaces are fast approaching completion. The two stacks are about fifteen feet apart, will be supplied from one stock house, and use the same casting house, and will be run by two large engines, both under the same roof.

A new sheet mill and new galvanizing works are being put in by the Cleveland Boiler Plate Company.

The works of the Excelsior Mower & Reaper Company, of Akron, are being run to their utmost capacity. The company have sold over 25,000 of their mowers and reapers. They have one of the lagest establishments of the kind in the State.

MISSOURI.

The new furnaces of the Jupiter Iron Works, near St. Louis, have been finished for some time except placing the machinery in position, but owing to the general depression of the iron trade have not been put in operation. The capacity of the furnaces is about 90 tons of pig per day for each stack, of which thereare two, 75 feet in hight, with 20 feet boshes. The Jupiter works are situated on the banks of the Mississippi, about 50 rods north of the Vulcan Iron Works, South St. Louis, and preparations are now being made toward putting them in operation as soon as the condition of the trade will warrant. The present week a 40 inch steam and a 100 inch blowing cylinder will be placed in position. Garrisons, Chouteau & Hart are the proprietors.

At the Helmbacher forge and rolling mill, at St. Louis, there are seven boiling and nine heating furnaces, five hammers, two trains of rolls, five large cranes and several small ones, eight boilers, four engines, eight forges, two doctors, one drill press, one punch, five lathes, three shears, one saw, one screw cutter, three fans, one blower. Nearly all of the works are in operation.

KENTUCKY.

The Champion Iron Drag Saw Company, at Louisville, are shipping their drag saws to all parts of the United States. These machines are made to saw a tree in the woods just as it falls, without moving the tree or power in any particular, and by its aid a large amount of lumber can be cut up in one day. It requires but one man to run it, while it does the work of twelve men.

Electro-Deposition of Iron.

An interesting paper was read by M. Volger before the Frankfort Society of the Physical Sciences last autumn, from which we extract the following notes relative to the treatment of iron.

Forty years ago M. Peligot succeeded in reducing chloride of iron by means of hydrogen gas, obtaining regulus of iron in octahedric crystals; and he also succeeded in preparing small malleable plates.

In 1846, M. Boettger succeeded in decomposing chloride of iron by galvanism, but he soon found that a mixture of ammoniacal sulphate and chloride of iron was more advantageous for the purpose, and he prepared this mixture very simply by dissolving together two parts by weight of sulphate of iron and one part of sal-ammoniac. He employed a piece of iron plate at the positive pole, and at the other a piece of metallic iron scraped bright. He thus produced beautiful iron coins, the metal of which was extremely hard and steel-like, but so brittle that the medals often broke in pieces when taken from the molds. It was, therefore, thought impossible to make any industrial use of this method.

In 1859, however, M. Jacquin published his method of depositing an excessively thin coating of iron on engraved copper plates, and for this purpose he made use of M. Boettger's process.

Very lately the deposition of iron by galvanism has been greatly improved by M. Klein, of St. Petersburg. In 1808 he produced before the Academy of Sciences, of that capital, the results which he had obtained by means of an ammoniacal solution of sulphate of iron, and a Meidniger battery with a piece of iron plate at the positive pole. With these he produced, by precipitation of the iron, not only entire plates of steel from the hardest to the softest, for the reproduction of engraved copper plates, which united the advantages of the softness of the copper for the engravers and the steel like hardness of the iron for printing from. He also applied the method to the production of various articles in iron. In all cases the iron precipitated by M. Klein is very brittle, and he found that it was combined with hydrogen, and that its specific gravity was not more than 7·675, that is to say, a little more than rolled iron, but the hydrogen was driven off by annealing, which gave the iron the density of 7·811, which is greater than that of hammered iron, and it then became perfectly malleable, eminently flexible and elastic, and capable of being welded; in a word, possessing all the characteristics of excellent hammered iron.

M. Volger exhibited to the society steel reproductions of engraved plates prepared by M. Klein, a block made up of strips of the deposited iron welded together, forged, filed and polished, and a shield reproducing perfectly an elaborate *repousse* composition of the "Battle of the Amazons," with a plateau weighing 15 lbs. The most valuable application of electro-iron was pronounced by M. Volger to be in its employment in stereotype works, and especially in the case of printing in colors for the government bank notes, cheques, stamps, &c., as iron is not affected by mercurial pigments which ruin copper, type, and other metals.

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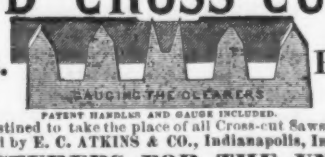

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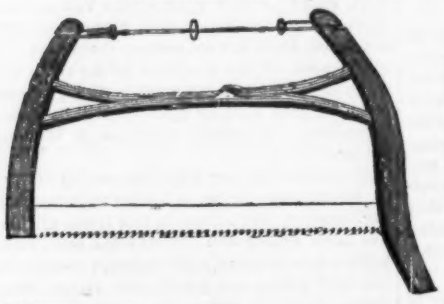

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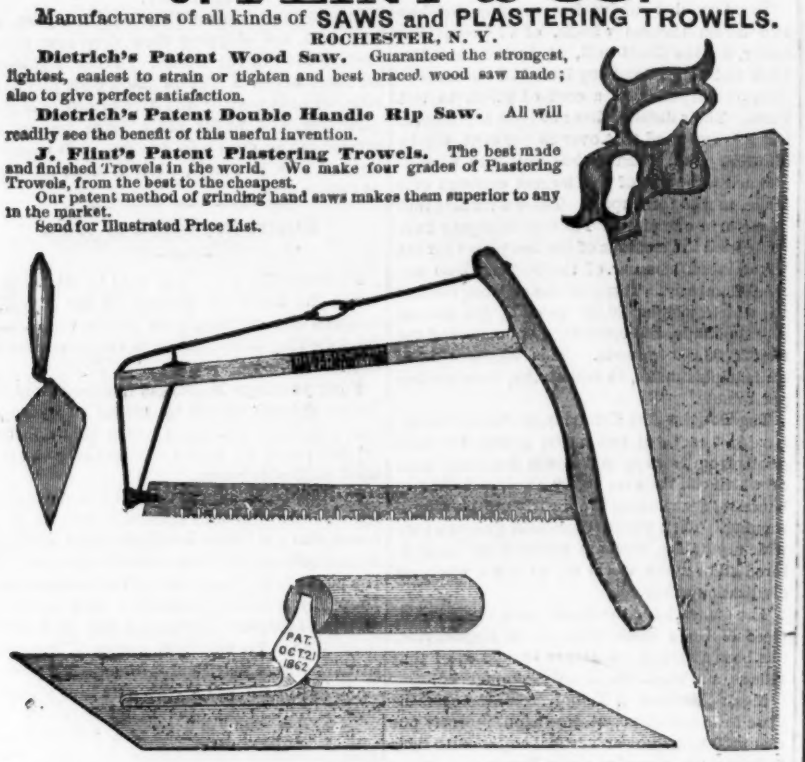

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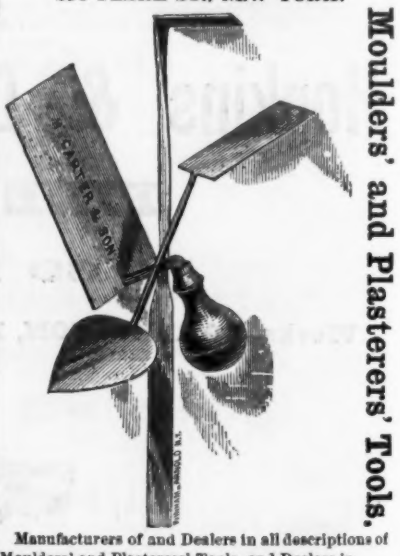

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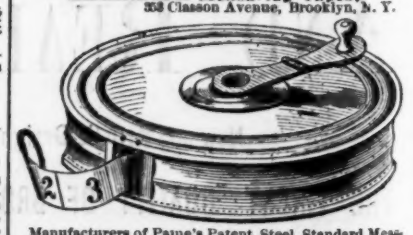

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Protection and International Trade.

A favorite argument with free trade writers is that the general success of protection would annihilate foreign trade. Protection could not produce cotton in Norway, nor tea in Russia, nor coffee in Germany, nor sugar-cane in Scotland, nor ivory in England, nor indigo in Ireland, nor mahogany or rosewood in France, nor raisins nor figs in Sweden, nor camphor in Denmark, nor sumac in Switzerland. In fact the burdens of international commerce are and must always be immense both in quantity and variety. And the best proof of the hollowness of the agument quoted is to be found in the vast amount of British commerce that consists in the mere handling of foreign products, buying from one nation and selling to another.

Great as are the varieties of soils, climates and resources of the United States, there are commercial staples for which we must always be dependent on foreign lands. India rubber, gutta percha, ratan, bamboo, palm oil, spices, drugs, tropical hard woods, camels' hair, goatskins, and an immense array of other articles will be imported in ever-increasing quantities long after we shall have ceased to import cotton, woolen and iron fabrics. And as foreign commerce has two sides, imports and exports, and our shipments of domestic products have increased while our imports declined, we do not exactly see how protection is to annihilate foreign trade. If we shall produce in the Southern States all the rice we need for home consumption, there is certainly no reason for lamenting the cessation of foreign imports of rice. And if instead of depending on Buenos Ayres for hides we become ourselves the greatest hide-producing nation in the world, it surely cannot be a cause of regret.

Commerce most enduringly gathers about nations that are in themselves great producers, as in the case of China, Brazil, Cuba, England, France, Germany, Russia and the East Indies. Hence the policy of this Republic in seeking to become constantly greater in production, instead of being inimical to foreign commerce, is exactly the course calculated to centralize it here. There are very many of our products that the world at large needs and of which we command the trade; and as to the general lists of commerce, the necessities of civilization are so varied that such a thing as the annihilation of foreign trade is a mere dream. It is not only improbable—it is impossible.

When we talk of a nation being independent and self-sustaining, we mean comparatively so, in order that in the event of a great war or a great blockade, or being suddenly cut off from foreign supplies by any other means, the deprivation will fall less heavily upon the people. If the importations of sugar, coffee and hides continue to subject us to the visitation of yellow fever, we submit that it is desirable to see whether we cannot raise supplies at home. But we really cannot understand that philosophy which, with ample facilities for producing inexhaustible supplies at home, prefers to import rice from India; which with the greatest grazing region in the world, and the most numerous herds of cattle and flocks of sheep, would rather see hides and wool imported from La Plata, Cape of Good Hope and Australia; with limitless resources in iron, coal, copper, lead and lumber, would give the preferences to the competing articles from abroad, and think this advanced civilization because it encourages foreign commerce.

At the present time, after fourteen years of the most resolute and unflinching perseverance in the protective policy, the foreign commerce of the Republic is greater than it ever was before. In proportion as our progress in domestic production causes the imports of corresponding foreign articles to decline, the internal prosperity of the nation enables the people to import larger supplies of other articles that we do not produce, or that are essential to our industries. In some lines of the foreign trade the domestic consumption has been limited by the high prices of the imported articles; but no sooner does the domestic competition begin than the prices decline, the consumption increases, and the market expands constantly. This was clearly proven in the case of steel rails, but many other illustrations of the same kind might be cited. If it were possible to naturalize, on a great scale, the production of tea and coffee in the United States, the prices of both would at once decline.

But when the foreign trade is put in direct hostility to domestic development we decidedly prefer the latter. The exchanges between New Jersey and South Carolina, or between New York and California, or Massachusetts and Michigan, or Pennsylvania and Colorado, can scarcely be considered as of less importance than those between the same States and Europe, Asia, Africa or the Indies. If two millions of capital were embarked in the former and two millions in the latter, we undertake to say that the first would be the most productive and the most enduring in its results. The domestic capital and industry that have built seventy thousand miles of railway at home, have done better than if the same means had been applied to the construction of as many miles of railway in foreign lands. And this rule is susceptible of general application.—*North American.*

Razors.

Razors, after all, form no unimportant subject, and their purpose—shaving—mounts in antiquity to pre-historic time. Far later than that rather indefinite epoch of the archæologists, Persians and Chinese, Egyptians, Jews and Gentiles, Greeks, Romans, and innumerable barbarous people shaved, if not their beards, more or less of their heads. The processes and the instruments employed by divers peoples and times were, no doubt, various, and probably curious in many ways, though but little is known about them. While soap was unknown, or a rare cosmetic, and steel not widely diffused, "easy shaving" could only have been accomplished by methods very different from our own. Almost in our own day might have been witnessed the extremes of the barber's craft in its primitive and its perfect instruments. Captain Cook was shaved in one of the Pacific Islands as an act of homage, by the king's barber, with a sharpened oyster shell, the process of getting over the tough beard of the great navigator occupying about six hours. Cook, no doubt, had his own old-fashioned steel razors in his cabin—quite as good, probably, as "the newest thing out" now in that line; and at the present day Sheffield razors are to be found plentifully amongst the Fiji Islanders, Bosjesmens, Hottentots, and the tribes subject to King Coffee.

The Chinese razor is a curious bit of sheet steel, very much like a penny piece clipped off straight at one side, and sharpened at the opposite one, with a thin projecting tail which connects it with the split handle almost identical with that of modern European razors, which suggests the notion that the rather peculiar handles in which our razors are mounted may have come to us from Asia. In Europe the straight or slightly curved blade of some four inches in length is universal, but innumerable varieties and vagaries, in form and proportion, weight, &c., are everywhare encountered, the real reason at the base of all being, probably, that there are razors made to sell and some to shave. But is an instrument for shaving a thing absolutely beyond the control of rational principle or the teachings of experience? There must be some one size and form of blade, and some one weight, that should be the best possible for the average human face and beard. Yet as to this no certainty can be arrived at from the doctors of the craft of razor fabrication. One recommends a light razor; another "our own make," with a crooked shank next the handle, probably, that no fingers not provided with the suckers of the octopus could hold; a third oracularly advises a heavy razor, with a thick back, and strong enough to cut the throat of Goliah; while Germans tell us our British razors are all wrong, that nothing shaves well but the Hamburg razor, with its hollow sides and thin pliable edge, which never require setting. We should like some light and guide through all this labyrinth and contradiction, for we must confess that the resulting impression chiefly left upon our minds by it is, that there are few branches of retail trade in small wares in which there is more humbug than in that branch of the cutlery craft which deals in razors. An excellent razor, well tempered, of good steel, and with a black handle, can be purchased for about 1/. We can testify that such a razor can shave well, and for many years. Yet go into some eminent "cutlery establishment" in any of the great London thoroughfares and your will be asked 12/ to 14/ for a pair of instruments with, perhaps, ivory handles, and much glitter from the polishing wheel, but intrinsically not a whit better than the soldier's razor at 1/. A curious essay, and of some length, might be written as to the improvements, pretended or real, that have within this century attracted scientific or general attention in razor making. Some of these, like those given account of by Parkes, of Birmingham, in his "Chemical Essays" of some forty years ago, which attempted to fix the temperature at which razors should best be tempered, were laudable attempts to reduce empiricism in art to the science of rule, though little came of it. Nor did any real improvements result from the somewhat elaborate experiments of Faraday and Stodart on improving razor steel, by the alloy of other metals in minute quantities. Rhodium and silver steel razors have all passed away, though so-called "silver steel razors" can still be purchased near Sheffield which do not contain a trace of silver. First-class cast steel of the most brilliant fracture and closest grain and perfect hardening and tempering are the only real requisites to form a first-class razor. The right quality of steel can be chosen, but in the tempering an element of uncertainty remains, which is no doubt the cause on which the capriciousness experienced in the goodness of any "pair" of razors proving quite alike depends.

A knife or surgical scalpel may cut through animal tissues with perfect smoothness and but little effort, but it may not shave well. The razor edge must not only be sharp, but smooth, *i. e.*, if it be like all edges, that of a saw, it must be that of a saw whose teeth are more than microscopically fine. This was the basis of a mode of sharpening razors proposed about forty-five years ago by Mr. Gill, a patent agent and editor of "Gill's Technical Repository," which drew for a time some attention, namely, to burnish simply the sides of the razor edge with the "currier's steel," which is only a bit of finely hardened and polished steel wire, and this thinning and smoothing of the edge is also the foundation of the Hamburgh construction, in which the edge formed by the osculation of opposite outside surfaces is thin enough to bend under the finger nail, and yet return to its position. But though these razors are said to need no setting, they scrape rather than shave, and most uncomfortably.

Then the "setting" of the razor becomes a source of ever renewed need and annoyance, it being a rare thing to get it well done, and the expense is no longer beneath consideration, since London cutlers have fallen in with the prevailing habits of extortion and doubled their prices, under the plea of enhanced wages, etc. We have very many readers in all classes and in all sorts of occupations, and amongst them many ingenious and inventive men. We ask them to consider whether it be not possible to construct a machine for automatically setting razors—one that driven by power shall apply its fine grinding power to the razor blade already fixed into a suitable rest or frame, in such a manner as to effect all that now depends upon the dexterity of the "setter's" hand, or the degree of carelessness, or the contrary, with which he does his work. With the polishing machine for telescopic specula and the gem cutter's wheel before us, why should we despair of this? Once accomplished, it would prove, even in London alone, a little gold-field to reward the perseverance of the inventor.—*The Engineer.*

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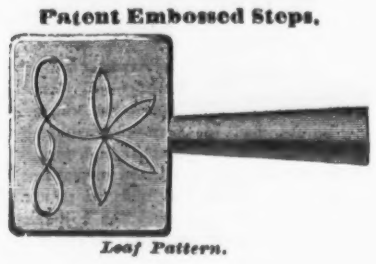
Patent Embossed Steps.



Leaf Pattern.

King Bolt Yokes.

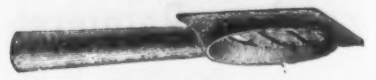
Established 1850.

No. 6 Fifth Wheels.

1871 Pattern Shaft Couplings.

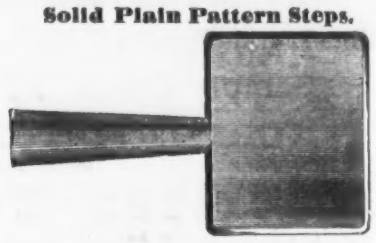
Patent Cross Bar Steps.

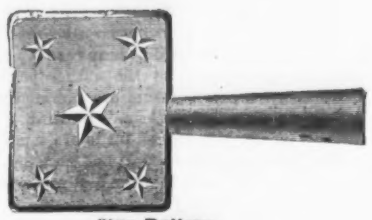
Upper View.



Lower View.

Solid Plain Pattern Steps.





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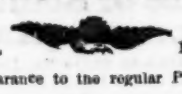
Our I X L  Bolt is made from approved brands of Iron, and is equal in every point of appearance to the regular Philadelphia Carriage Bolts, being made on the same machinery, and the quality is not surpassed by any bolt of like grade in the market.

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New York, Thursday, November 12, 1874.

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JAMES C. BAYLES . . . . Editor.
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CONTENTS.

Chance for Our Manufactures in the Dutch East Indies.

We have received an interesting document in the shape of an announcement and prospectus of the Second Agricultural and Industrial Exhibition at Diocjakarta, Island of Java, Dutch East Indies. Our readers will be excited to learn that the exhibition will be held under the immediate patronage of His Highness, Hanangko Boewono VI., Sultan of Docjakarta, and Knight Commander of the Order of the Netherlands Lion; also, that the Vice Presidents will be Messrs. A. J. B. Wattendorff and J. M. Pijnacker Hordch, both of whom are Knights of the Order of the Netherlands Lion. The idea of an international industrial exhibition under anybody's patronage in such a place may cause amusement, but there is really no reason why it should. It is especially desired to establish more intimate commercial relations between the Dutch East Indies and the United States, and a favorable opportunity is now offered to bring such of our manufactures as are adapted to that market prominently to the notice of the people of those countries. The Dutch colonies in the East consist of the islands of Amboyna and the other so-called spice islands; the Bandas, Banca, Java and Madura—all absolutely belonging to Holland—while on the Islands of Sumatra, Borneo and Celebes, the Dutch own large tracts, which with the former compose the Dutch Indies, containing a total population of thirty millions. The productions of these colonies are as various as they are valuable. Rice, indigo, tobacco, sugar, cinnamon, pepper, allspice, nutmegs, cloves, oils, costly woods, gums, camphor, beeswax, tin, ebony, are some of their staples, beside mother of pearl, diamonds and precious stones, which find their way to all other countries in exchange for the manufactures of Europe, China and Japan; those of America having thus far been introduced only on a very small scale, and almost entirely indirectly, through England, Germany and Holland. Beside the above articles of export, these colonies produce every species of cereal, vegetable and fruit indigenous to the climate of those latitudes. The population of the Dutch East Indies consists of Javanese, intermixed with Malays, a few Arabs, Hindoos and Chinese, and its occupation is eminently agricultural. In Java (the largest island of the group) containing nearly ten millions of people, this is particularly the case. It is especially desired by the projectors of the exhibition to secure a good display of certain classes of American manufactures, especial articles belonging to the following classes, for which liberal premiums are offered: Agricultural implements; tobacco and indigo presses; coffee and rice hullers; coffee and rice winnowers; fertilizers for sugar, coffee, indigo and rice plantations; articles of hammered iron, tin and copper; saddlery and leather work; building materials and machinery; cooper's work; wagons; pottery; basket work; wood carving machinery; joiner work and house and school furniture, and cotton fabrics. A special prize of $200 in gold, is offered for the best portable steam press for stamping sugar in baskets. This seems to be an excellent opportunity of introducing American manufacturers to a large and profitable market. The cost of sending goods is 75 cents per cubic foot, and 15 cents primage. In the Javanese tariff the following articles have been placed on the free list: bricks and tiles for walls, roofs and floors, and other materials for same; books, maps, charts, engravings, music bound or unbound; engines and machinery, implements, apparatus and tools for agriculture, or for every kind of industry, or for mining or domestic purposes; rosin, pitch, tar, ship timber, masts, spars, oars and canvas; ice, coal, coke, chalk, iron, copper, tin lead, steel, zinc and manufactures of all these metals, viz., pieces, rods, sheets, rails and iron for railway purposes; gas and other pipes; axles, wheels, (except carriage); framework for buildings, sheds or barns; bolts, nails, screws, wire, anchors, anvils, chains, capstans; iron tubes for canals, railway wagons, canal boats, lighters, or sections of these; bronze and brass work.

Those for whom this subject is of interest can obtain fuller information at the office of the Netherland-American Steam Navigation Company's New York offices, No. 50 Broadway.

The American and Foreign Lead Markets.

The influences which have operated to disturb the home and foreign lead markets during the current year, have been of a character somewhat unusual. As the result of the panic, our own production of lead has fallen off materially. Many—perhaps most—of the Western smelting works were compelled to suspend operations, but, owing to the small demand, the lack of fresh supplies of pig lead was not felt during the spring months. Building operations were very generally abandoned, and the demand for manufactures of lead suffered a proportionate decline. Gradually, however, the consumptive demand began to revive, and during the summer months the demand exceeded the available supply—so much so that some of the large refining establishments sent out buyers to Colorado and Utah for additional supplies of bullion. This scarcity of domestic lead would probably have induced a high range of prices at the time, but for the fact that the government took advantage of the opportunity to sell some 9000 tons remaining on hand of the surplus stock of lead accumulated by the Quartermaster's Department during the war. When the gradual sale of this important stock was announced, prices began to decline, and consumers at once came into the market and made liberal purchases. It must be conceded that the sale of the government lead was conducted judiciously, and with a due regard for the interests of both dealers and consumers; and when this was understood the market recovered from extreme depression. As consumers had supplied their requirements, however, any tendency to an advance in prices was quickly checked by a slacking of the consumptive demand. Notwithstanding all the varied influences thus operating upon the market to alternately raise and depress values, the trade has been without extraordinary excitement and prices have remained as uniform throughout as any consumer could have wished.

In Europe, on the other hand, the lead market has been unduly stimulated by causes all operating in the interest of holders. The course of prices has been steadily upward, and had lead been a favorite metal with speculators, like tin and copper, there is no telling what figures it might have reached. As it was, speculators would probably have tried to monopolize lead, had it not been for the absence of Peninsular statistics since the beginning of the civil war, and the uncertainty in which the issue of that contest is still shrouded. Official Spanish statistics are published only once in five years—the last official report relating to the quinquenniad ended with 1871. During that period Spain exported no less than 420,700 tons of lead, or an average of 84,140 tons per annum. The total excess of the production of the five years over that for the five years preceding was about 55,000 tons. Although the Carlists have been in partial possession of the lead producing districts several times, and although the "Intransigente" rebellion also interfered with the production for a short time by disorganizing labor at the mines and capturing Carthagena, production in Spain has at no time been suspended completely, and lead has been exported at intervals. The relative importance of Spanish lead production is best shown by the following statistics of European production published in 1869:

	Tons.
Great Britain	68,236
Spain	66,803
France (in part Spanish)	16,692
Germany	49,337
Sardinia	23,255
Belgium	10,352
Greece	8,483
Austria	7,637
Sweden	284

Thus, of a total production of 251,079 tons, Spain produced 66,803 tons, or over 26 per cent. With a heavy falling off in the Spanish exports, it was natural to expect a sharp advance in the price of lead throughout Europe; but as industry in nearly all branches was paralyzed about the time of our panic, consumption was held in check. In May, however, the Russian government made some large purchases for army purposes, and the market stiffened gradually, assisted by a revival of the consumptive demand, great ease in the money market, and unusually light stocks in London, Hamburg, Berlin and Marseilles. From late advices we learn that the principal powers of Central Europe are arming on a scale which indicates an apprehension of impending war, and as quartermasters' departments are liberal purchasers of lead, that metal will probably still further advance in value. The Carlist rebellion continues, and, from present appearances, is likely to be long protracted. There appears, therefore, to be no likelihood of an early decline in lead prices in Europe. In this country the prospects of holders are fair. The country is slowly but surely recovering, and the prospects are in favor of a revival in the consumptive demand for all metals, and as lead, after iron and copper, is the most extensively used of all the metals, especially for building purposes, it is probable that by the opening of spring the unsold balance of the government stock will be absorbed, and that our smelters and refiners will then have before them a long period of profitable activity.

The Lake Champlain Ship Canal.

The preliminary surveys for the proposed ship canal to connect Lake Champlain, at Whitehall, with the Hudson River, at Fort Edward, have been completed by Mr. G. Hall, by order of Col. Fuller, State Engineer, who will make an estimate of the cost of the work and present it at the next session of Congress. It is hoped the national government will undertake the work. The national importance of the proposed improvement has already been set forth in these columns, but a few remarks at this time on the features of the work which give it especial interest to the iron trades, may be of interest as showing our readers in other parts of the country that it is something more than a scheme of local improvement which the people of this State are seeking to shift upon the broad shoulders of the national government.

The work proposed, and which is shown to be practicable by the surveys just made, may be briefly outlined as follows: From Troy to Fort Edward, a distance of forty miles, the river is to be improved, and there is an elevation of 116 feet to be overcome; from Fort Edward to the summit, a distance of two miles, an elevation of thirty-one feet; from the summit to Whitehall on Lake Champlain, a distance of about twenty-one miles, there is a descent of fifty feet to Lake Champlain. The highest point between tidewater and the St. Lawrence is 147 feet, and the entire length of the river and canal improvement is sixty-three and three-tenths miles. Eleven locks and dams will be required, the former 300 by 45 feet in size, to overcome the elevations and to give ten feet of water in the river. A portion of the canal is already formed by Wood's Creek, running into Lake Champlain, which only requires a little straightening, so that the actual canal to be constructed is reduced to seventeen miles, requiring only two locks. The proposed dimensions give a width at the bottom of 110 feet, and on the surface of 150 feet. The route from the terminus at Whitehall extends up Lake Champlain to the Richelieu River, and thence to the St. John's River, which is entered by the projected Caughnawaga canal, an enterprise chartered by the Canadian government to connect the St. Lawrence River with Lake Champlain *via* the St. Johns River, a distance of twenty-nine miles. From Caughnawaga on the St. Lawrence, the route continues *via* the Beauharnais and Cornwall canals, works already constructed, around the rapids of the St. Lawrence, and by that river to Lake Ontario, thence through that lake and the Welland canal to Lake Erie. From Lake Erie vessels can pass to Lakes Huron and Michigan and Georgian Bay, and *via* the Sault Ste. Marie canal, of little more than a mile in length, from Lake Huron into Lake Superior. From Lake Michigan, at Green Bay, an improvement of the Fox and Wisconsin Rivers, now in progress, will open water communication between Green Bay and the Mississippi River, a distance of 278 miles, and also *via* the Illinois and Michigan Canal and Illinois River to the Mississippi, a little above the mouth of the Missouri. Through this entire distance from the lakes to tidewater, with the exception of eighty-four miles of ship canal, there is a free and uninterrupted water way upon which vessels can be propelled either by steam or sail. Such is the route proposed for the transmission of Western freights by all water way to the Hudson. This system of improvement is needed to prevent the diversion to Canadian ports of the traffic of the St. Lawrence route. It will enable us to take advantage of all the Canadian improvements by which the free navigation of the St. Lawrence route is secured, and still retain the control of the export trade of ports on the upper lakes, which would else find an outlet at Montreal.

To the iron trades of the country, the one link in this chain of water communication lying within the boundries of this State possesses an immediate and permanent importance, as affording a better and cheaper outlet for the ores of the Lake Champlain region. The furnaces and mills of the lower Hudson, New Jersey and Eastern Pennsylvania are largely dependent upon this region for their supplies of magnetites. Nearly 400,000 tons per annum have been shipped from the mines now worked, and with better facilities for cheap transportation we should witness a vast increase of production by the opening of rich and extensive deposits of magnetites and hematites and titaniferous ores not yet developed to any extent. The proposed canal would thus render accessible a vast and varied supply of cheap ores of excellent quality, and anything which accomplishes this result possesses a national importance. We have not space at this time to discuss the general commercial advantages of uninterrupted water communication from New York to New Orleans, *via* the St. Lawrence, the Lakes and the Mississippi, but these are certainly great enough to justify the undertaking of the work by the national government.

Trade Marks and Geographical Names.

An interesting case involving the validity of a trade mark, which is at the same time a geographical name, lately came before the Pennsylvania courts. The Glendon Iron Company have long used the name Glendon as the distinguishing mark by which their pig iron has been known in the market. The name, we believe, was original with the company, and was adopted by them as early as 1844. During recent years, however, the name of the works has gained a wider application which, in some sense, makes it the common property of manufacturers in that immediate locality. In 1867 a borough was incorporated under the name of Glendon, and a second iron company, whose works are located within the borough limits, have followed the example of the first and adopted the name Glendon as a trade mark. Regarding this as an attempt to trade upon an established reputation and thus secure a more ready sale for an unknown brand of iron, the original Glendon Iron Company endeavored to enjoin the new company from using their name, but the application was denied by the Supreme Court of the State, on the ground that, as Glendon had become the name of a borough, the company had lost all right to its exclusive employment as a trade mark, as it then became the property of all residents within the borough limits.

This decision was quite in accordance with established precedents in English and American law, and it is scarcely probable that any other view of the case would have been sustained on an appeal to the Supreme Court of the United States. The only exceptions to this ruling would be in the case of a manufacturer in some other locality—say Philipsburgh—who should use the name Glendon: but any other iron company with works in Glendon borough has as much right to employ that name as the original company. This is a point in law which manufacturers would do well to bear in mind. Where they have once allowed the name of their company or works to become a geographical designation, they have no means of protecting themselves against such of their neighbors as may choose to adopt that name and take advantage of its popularity; but they have the right to protect their trade mark in advance of such an appropriation of it, and the courts would sustain an injunction against the employment of a corporate name or trade mark as a town or borough name.

New Publications.

THE INTERNATIONAL REVIEW, for November and December. A. S. Barnes & Co., No. 111 William street, Publishers.

The present number of this excellent periodical, which has been published bi-monthly since January of this year, fully sustains the promise of the earlier numbers. It is in all respects a first-class review, and compares favorably in character and interest with the best publications of the kind in any language. Its list of contributors includes the names of many who occupy prominent positions in the front ranks of literature, history, science, art, statesmanship, diplomacy, theology and philosophy. The following are the principal articles in the current number: "International Communication by Language," Philip Gilbert Hamerton, London. "History of American Architects at the National Capital," James Q. Howard. "Iron Supplies and Manufactures of the U. S.," Prof. John S. Newberry, M. D., Columbia College. "Study of Greek and Latin Classics," Prof. Elliott, D. D., Western Theol. Seminary, Chicago. "Divorce," Hon. N. H. Davis, South Carolina. "The Domestic Commerce of the United States," Hon. S. Shellabarger, of Ohio.

Of the two articles of especial interest to our readers we can speak in highest praise. Prof. Newberry's article on the Iron Resources of the United States, of which we republished a part, contains much valuable information in a condensed form, although a majority of iron manufacturers will be apt to differ somewhat from the writers opinions as to the future of the industry. Mr. Shellabarger's article on our domestic commerce is also a valuable contribution to the cheap transportation discussion. It is devoted to a consideration of reciprocal interchanges among our people of the productions of this Continent. Mr. Shellabarger aims to show the failure of those upon whom the care of our commerce has been devolved by government, to adequately realize and meet their obligations. The author proceeds to examine statistically: 1. The extent and conditions of the products and commerce of the people. 2. The average cost of transportation from West to East. 3. Benefits of improved means of transportation. 4. Comparisons between the United States and other grain producing and cotton producing countries. 5. Railroad competition as a cheapener of transportation, and other points of vital interest. It is a problem that will decide no doubt the fate of the Republic. He asks "what are the powers, and what the duties, "of the federal government toward this "commerce amongst the several States?" and ventures to predict that the American people have resolved irrevocably to rescue, develop and defend their commerce. He recounts the history of other nations in their efforts in the direction of commerce and the carrying trade; ventures upon a comparison between them and us; quotes legal judgments in important trials, and concludes by summarizing the "remedies "for our commercial condition which seem "best sustained by the experience of all other "nations—and by the results of investigations "at home."

A PRACTICAL THEORY OF VOUSSOIR ARCHES, by Prof. Wm. Cain, C. E., N. Y. D. Van Nostrand, Publisher.

This little volume forms No. 12 of Van Nostrand Science Series, and is a republication in convenient pocket size of a paper originally published in Van Nostrand's *Engineering Magazine*, in which Dr. Scheffler's theory of arches was first given to the American public. Vertical forces are alone considered. Numerous experiments are given in illustration of the theory advanced, both for symmetrical and unsymmetrical arches, and for arches unsymmetrically loaded. The volume is illustrated with wood cuts which greatly assist the reader in acquiring the theory presented.

A number of Sheffield capitalists having organized a corporation under the name of the Bilbao Iron Ore Company, limited, and having already spent upward of £400,000 in developing Spanish mines, lately sent Sir John Brown and other gentlemen to spy out the land. These gentlemen return with large stories of the mineral wealth of Spain. The only fear they have is that the Spanish government may throw impediments in the way. By treaty arrangements the government of Madrid is debarred from levying an export duty, but it is now threatened to impose a municipal tax. The town of Bilbao fancies it can recoup itself for the damage caused by the siege by levying a duty of 5d. per ton on all ore leaving the coast, but the question whether it can do so or not remains to be settled.

Scientific and Technical Notes.

La Revue Industrielle publishes the following with regard to

FLUXES FOR STEEL:

In his work on the treatment of phosphoric irons, both wrought and cast, M. Lancauchez gives the composition of the fluxes made use of by MM. Verdie and Micolon, for the manufacture of steel by means of iron and steel scrap. The following are two recipes employed by these gentlemen:

No. 1.

	Kilogrammes.*
Peroxide of Manganese	0·750 @ 2·000
Tungstate of iron	0·200 @ 0·700
Borax	0·300 @ 0·900
Carbonate of soda	1·000 @ 2·000
Quick lime	0·000 @ 0·500
Pulverized charcoal	0·150 @ 0·600
Total for 100 kilogrammes* (nearly 2 cwt.) of cast steel	2·400 @ 6·700

No. 2.

	Kilogrammes.
Peroxide of Manganese	0·500 @ 2·300
Tungstate of iron	0·150 @ 0·750
Borax	0·400 @ 1·000
Carbonate of soda	1·500 @ 3·000
Sal ammoniac	0·150 @ 0·300
Pulverized charcoal	0·100 @ 0·500
Total for 100 kilogrammes (nearly 2 cwt.) of cast steel	2·800 @ 7·850

These substances were well ground together, then calcined in old worn out crucibles placed in the furnaces at a low heat, so that, during the night, perhaps for 12 or 14 hours, the mixture was exposed to a temperature of from 1200° Cent. (2192 Fah.) at the beginning, to 500° Cent. (532 Fah.) at the end.

It is easy to see that, in this calcination, manganate of soda and basic borate were produced, and that the sal-ammoniac was completely decomposed under the form of chlorine and chloride of iron evolved by the tungstate of iron; then, the water in combination with the borax and the carbonate of soda, being partially decomposed at a temperature of 600° Cent. (1112 Fahr.) was obliged to give up some of its oxygen to the peroxide in order to facilitate the formation of the manganates of soda and of lime.

It will be remarked that in this chemical process there is no trace of silicium in the products mentioned, which, with respect to the acid, had played the part of the most energetic bases, thus accounting for the fact, that their use was only possible in plumbago crucibles; now, as it was by chance that MM. Verdie and Micolon were unable to procure in Paris other crucibles than those of plumbago, which came from England, it is due to this chance, says M. Lancauchez, that a process has now succeeded, which before had always failed.

The recipes of MM. Verdie and Micolon approach very nearly to that of M. E. Gallet:

	Kilogrammes.
Alumina	0·500 @ 1·000
Clay	0·120 @ 0·200
Pulverized charcoal	0·500 @ 0·500
Carbonate of lime	0·380 @ 0·420
Carbonate of potash	0·180 @ 0·300
Carbonate of soda	0·020 @ 0·028
Caustic potash	0·500 @ 1·000
Oxide of manganese	0·040 @ 0·040
Resin	0·040 @ 0·050
Muriate of soda	0·010 @ 0·010
Sal-ammoniac	0·500 @ 1·000
Borax	0·500 @ 1·000
Water	40 per cent. of the weight.

This mixture must be made with care. The quantity to be used per 100 kilogrammes (nearly 2 cwt.) of steel, varies from 3 to 7 kilogrammes, (about 6 to 15 lb.)

Capt. Noble and Mr. Able have concluded their

RESEARCHES INTO THE ACTION OF FIRED GUNPOWDER,

and have embodied their conclusions in a report in the proceedings of the Royal Society. Their objects they state to have been: (1) To ascertain the products of explosion when fired in guns and mines; (2) to investigate the tension; (3) the effect of various sizes of grain; (4) the variation caused by various conditions of pressure, comparing explosion in a closed vessel with that in the bore of a gun; (5) the volume of permanent gas; (6) the heat; (7) to ascertain the work performed on a shot in the bore of a gun. For this very careful experiments were carried out to ascertain the pressure, volume of permanent gas, heat, and analysis of gases and solid products. A vessel of mild steel, tempered in oil was used, completely closed with a closely fitting screw firing plug, through which were led circuit wires with fine platinum wire enclosed with mealed powder, which it fired when heated by the current of a Daniell battery. The results were briefly as follows: The pressure was registered by Capt. Noble's crusher gauges at from 1 ton to 36 tons per square inch. The analysis of the gaseous products showed a regular change, due to variation in pressure, carbonic anhydride increasing with a decrease in carbonic oxide as the pressure increased. The solid products were subject to greater and less regular variation; speaking generally, the chemical action is more complicated than has been supposed, and the old fundamental equations are found to represent it very imperfectly. More carbonic oxide and potassium carbonate, and less potassium sulphate than has been thought is produced. Potassium sulphide is thought to be formed primarily, but eventually it is not present in any considerable quantity, having given place to potassium hyposulphite. The temperature of explosion is found by means of platinum wire or foil to be about 2300 deg. C. About 35 per cent. of the heat generated is communicated to a small arm, and but 3 per cent. to an 18-ton gun. The products of explosion consist of about fifty-seven parts by weight of solid to forty-three of permanent gas. When the powder fills the space in which it is fired, the pressure is about 6400 atmospheres, or 42 tons per square inch. The products of explosion generally are the same in a gun and in a completely closed vessel. The work on the projectile is due to the elastic pressure of the permanent gases. These results have only been obtained by a long and laborious course of very carefully conducted experiments. They are very valuable, and such as but very few individuals have the means of carrying out.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Nov. 9, 1874.

This wonderful country has again passed through another of those trials which "threatened to destroy our national existence," and still pursues its way. Previous to the election we were assured that a democratic success would cause a financial revulsion; bring about repudiation; restore the theory of secession; absolutely destroy all manufacturing industry; and in short that chaos would come again. Such a democratic success was gained as never before in the country at any one election. We all naturally looked for the threatened disasters, accepted the situation philosophically, and prepared to emigrate to Japan or Fejee. Days pass, and the cable brings us news of a steady market for American securities abroad, while at home bonds and gold remain unaffected and stocks advance. For the moment business men discount the possibilities of the future, and then conclude that it was not "such a great shower after all." The iron trade was the especial industry to be destroyed, and the effect of its approaching dissolution is seen in a decidedly better feeling, and positively more disposition to purchase by consumers. No one believes that the advent of the democratic party to power means repudiation or free trade, or a wiping out of constitutional amendments, any more than it means the payment of the Confederate loan and the restoration of slavery. What surprises our neighbors abroad is that such a state of affairs can exist with the quiet continuance of industry and business, and the London *Times* truly says, in commenting on our election: "Such a situation is not inducible here. The discredited ministers would retire from office before the meeting of Parliament. An attempt to maintain a similar state of affairs would be passionately resented in France, yet it is borne in America without remonstrance, the victors patiently waiting the fruits which are to be found in their succession to the federal government."

This is undoubtedly the case, and the conclusion to be deduced from it is either that we are the more sensible people, or that we are even more strongly influenced by our material interests than that people who have been stigmatized as a "nation of shopkeepers." Independent of politics, the party newly come into power has the most glorious opportunity to shape the future welfare of the country that has ever been offered since the revolution. The industrial interests of the whole country may be made in all sections more prosperous than ever before; the disturbed finances adjusted; the former rapid progress of enterprise restored, and the whole accomplished with nothing more of statesmanship than the use of common sense. Who of us would not welcome the coming of such a party into power, whatever be its title. The people may be always safely trusted with the handling of the great interests of this country, and it would be quite as idle to say that the result of the late elections was not a direct expression of the people as to say it was a popular verdict in favor of the old democratic principles as now construed.

Much interest has been expressed, especially in this city, as to how the report of the investigating committee of the Pennsylvania Railroad Company would be received abroad, and, indeed, action was deferred on it until the English shareholders could be heard from. During the week the *Times*, of London, has been received, with a most favorable acceptation of the report. Not usually favorable to American enterprises, the *Times*, perhaps from the late change in the editor of the money article, assumes a very kindly feeling in this case, and manfully admits the force of the report, and the magnificent showing which it makes, in the following words:

"The company is very strong as it is, and the peculiar rights which it enjoys in land of rapidly growing value, in its leases, and in the strong hold which it has on a great traffic route, makes its prospects good."

With probably a continuance of the same feeling, the same journal in another article squarely recommends American investments, and especially commends our railways. The gist of most articles lies in the beginning and ending, and this is not an exception. It commences with the axiom that "the great North American Continent offers, beyond doubt, a splendid field for investment to the English capitalist," and closes with the conclusion that "the growth of railways in America has of late years been very rapid indeed, but they have not yet outgrown the demand for them, and the American railway system may even now be largely increased without going at all beyond its reasonable and legitimate limits."

While on railways, let us note the declaration of a semi-annual 5 per cent. cash dividend by the Penna. R. R. Co., payable Nov. 30th, with the following agreeable showing by the finance committee. The gross receipts of the past six months were over $19,500,000, with expenses of $12,500,000, so that after deducting interest, guarantees, deficiencies and provision for all contingencies, the net amount available for dividend was $4,265,523, which paid a 5 per cent. award, also paid State tax, and left a balance to the credit of profit and loss of $535,634. Now these figures show that business has not been so bad for the year following the panic as stated. Here is an enterprise as much affected or more so than any other, earning 10 per cent. since the smash, providing for a very heavy interest debt, covering guaranteed interest on hundreds of millions, and yet putting by a surplus of over a million in the year's business. The London *Times* is right in American railways being good investments, but that is no reason for Smith to build a new rail mill, which is unfortunately the result when prosperity returns. The local gossip is dull. The Franklin Institute continues to attract visitors, and the committees are preparing their awards of premiums. The National Academy of Science has been in session here for some days, before which numerous papers of a strictly scientific character were read. This was an informal meeting, the law creating the Academy requiring officicial meetings to be held in Washington. At the Franklin Institute, Prof. Barker, of the University of Pennsylvania, shows what is termed a *thermascopic* paint, which is designed to indicate, by change of color, the presence of "hot boxes" when applied to journals. The peculiarity consists in the paint changing in color at a temperature of 160 degrees, from red to black, and returning to its natural color when cooled. Hence its applicability to journals. A project which will require the investment of large capital and the employment of numbers of mechanics is said to have been fairly organized. This is the construction of extensive docks and warehouses on the Delaware below the city. This has been made necessary by the rapidly increasing commerce of the city and the lack of dock facilities. The efforts of *The Iron Age* in pointing out additional supplies of ore at low prices are fully appreciated by furnace men, if one can judge from their remarks. I was told to-day that this information was of the first importance; one furnace owner saying that he had to pay in this State $4 per ton at the mine for a thirty per cent. ore, which was twenty miles from his furnace, and that Bessemer ores were worth from $9 to $10 per ton delivered at furnace. This is borne out by the fact that a cargo of Motka ore, from Bona, Algeria, was lately discharging at our wharves, the freight on which, the captain said, was seventeen shillings per ton. This added to original price of ore and transportation by rail hence to works must bring it quite up to $9 per ton. With the abundance of iron ores, it really seems sinful to be importing such material. In ore sales I hear of the purchase of some large properties in East Tennessee by English capital, amount being $120,000, cash, also a large sale in Virginia, likewise for English account, and of the presence of several foreign parties in the field searching for black band ore, zinc ore and fluorspar, with a view to investment.

The Iron Resources of the United States.

PROF. J. S. NEWBERY.*

(Concluded).

7. *Lake Superior Iron Region.*—The ores of this district have already been so fully described as to require here no lengthy notice. From the want of mineral fuel on the shores of Lake Superior most of these will go elsewhere to seek the coal; but with the richer ores—which will best bear the cost of transportation—there are found immense quantities of lower grade, that must be smelted, if at all, at home. For the reduction of these ores a limited supply of charcoal can be obtained near at hand; but the iron industry which is destined to grow up here must depend mainly upon the importation of mineral coal brought as ballast by returning ore vessels.

As dependencies on the Lake Superior iron district, we should mention the great number of furnaces and iron works located at Escanaba, Milwaukee and Chicago, on Lake Michigan; Detroit, Cleveland, Erie and Buffalo, on Lake Erie. To these and other points on the shores of the great lakes the ore is floated cheaply, and is manufactured where disembarked, or is distributed through the interior to be brought in still closer proximity to the coal; as at Brazil, Indiana; Columbus, Youngstown, etc., in Ohio. Already a great iron industry has grown up, based on the relations which have been indicated between the ore and coal. Within the last 50 years the increase of population and wealth along the shores of the great lakes has been almost without parallel in the history of the world. The next half century will probably witness even greater changes. To this prospective growth an abundance of iron will be a necessity, and this, from the nature of the case, must be furnished from three points or lines of manufacture; first, near the mines, where a limited quantity of iron will be produced from charcoal and coke or coal brought as return freight; second, along the shores of the lakes, where the ore is transhipped and meets coal from the interior; third, in the vicinity of the coal mines, to which the ore is brought overland by rail. Neither of these points or lines can monopolize the iron manufacture, since return freights must be furnished to empty coal cars as well as empty ore vessels. The preponderance of the lake shores or the interior will be determined mainly by the point to which economy of fuel can be carried in our iron manufacture. One and one-half tons of rich Lake Superior ore will make a ton of iron, while two and a half to three tons of coal are at present consumed in smelting it. Hence it would seen cheaper to carry one and a half tons of ore to the coal than two and a half tons of coal to the ore. But since the lake market is the great market, most of the iron made in the interior will be brought back to the lakes, thus equalizing the inequality, and making the lake shores at the present time as favorable locations for the manufacture of iron as the interior. If, now, it were possible to improve our processes of iron manufacture till we could make, as they do in the Cleveland district, England, a ton of iron from a ton of coke, or from a ton and a half of raw coal, it is easy to see that the lake shores would become the best positions for the manufacture of iron. This result might be attained by improving our processes and increasing the capital employed in the iron business, or, to be more specific, by bringing several furnaces under one enlightened management, and doing the business by wholesale rather than retail, and by adding to the hight and capacity of the furnaces and increasing the pressure and temperature of the blast. All these improvements are, in time, sure to be made, and therefore we are safe in predicting that the shores of the lakes will become the chief places of manufacture of the Lake Superior ores.

8. *The Far West.* Little iron is yet made west of the Mississippi. Good ores abound, however, in many places, as magnetic and specular ores in the Rocky Mountains of Colorado, Utah and New Mexico, and in the Sierra Nevada of California. Clay ironstone of good quality also exists in connection with the Cretaceous lignites of Wyoming and Colorado. On the Chug Water in the Black Hills are heavy beds of magnetite, but these are so much contaminated with titanium as to be valueless. Throughout the Far West, timber, as a general rule, is not abundant, and hard wood timber is almost unknown. Good charcoal is, therefore, out of the question. Hence it is easy to see that the future success of the iron manufacture in that region will depend on the utilization of the Cretaceous and Tertiary lignites as furnace fuels. Though generally unfit for use in the blast furnace, they can undoubtedly be employed with Siemens' regenerator, and by this means the wants of the population can certainly be supplied with iron of home production.

* From *The International Review* for November, A. S. Barnes & Co., New York, publishers.

Cost of Manufacturing.

The following, which we take from the *Iron Molders' Journal*, a pamphlet setting forth the views of the molders' union, is interesting as furnishing a sample of trade union reasoning on matters pertaining to business management:

"Within the past twelve months pig iron has fallen in price from twenty to thirty per cent., according to quality, and in the machinery branch of our trade wages have fallen on an average about ten per cent. What reductions have been made to consumers we have no means of knowing, but feel confident it will not equal the reduction in raw material and wages."

"In the stove branch wages have not fallen, and the only advantage stove manufacturers have is in the reduced cost of pig iron; and if they have lived up to the pledges made by their association there has been no reduction to consumers.

"Pig iron is now sold at a figure which its makers claim does not cover cost, and it is reasonable to suppose that but a small increased demand for it will result in an increase of price until it reaches the prices paid one year ago—an increase over present prices of not less than twenty per cent.

"Mr. John S. Perry, of Albany, calculates that a gross ton of iron will make 2120 pounds of clean castings, which would make seven stoves at 300 pounds each. He further calculates that molding costs $1·37 per hundred pounds, which would make the cost of a 300-pound stove for molding $4·12½. No. 1 foundry iron was quoted in New York on September 10th at $30 per ton, which, at Mr. Perry's figures, would make the iron in a 300-pound stove cost $4·28, supposing that all No. 1 iron is used.

"Inside of six months it is safe to predict that iron will advance not less than 25 per cent., or $37·50 per ton—an increased cost to the stove manufacturer on a 300-pound stove of $1·07. When this increase in cost of pig iron is made we will never hear a word about foundries closing on account of it. They will continue without a protest, without a murmer against this increase in price, although it must sadly knock to pieces price lists, and, perhaps, contemplated profits. Let us however reverse the case. We will suppose that during the coming year the price of pig iron would remain at present figures, and that the molders should, all over the country, demand an increase in wages equal to twenty-five per cent., amounting on the 300-pound stove to $1·03. What would be the result? It is barely possible that any foundry from Maine to Mexico would pay the advance without a fight, while the probabilities are that there would be an immense strike or lock-out in every foundry in the land. There is no possibility of such a demand being made, but it is possible that the ten per cent. taken off during the panic will be demanded, and we will hear a terrible wail about the injustice of the demand, although it will not, in a machine foundry, amount to an increase in the cost of manufacturing equal to an increase of $3 per ton on pig iron. What we would like to know is why are such desperate means resorted to to prevent the molder from securing a small advance in wages, which would increase the cost of manufacturing to that extent, when a still greater increase of cost, through enhanced price of pig iron, is consented to without a word—in fact, looked upon as a matter of course? An increase in the cost of manufacture equal to $3 per ton, by the molder, is an outrage that must be resented by a strike or lock-out for months; but an increase in cost of manufacture equal to three, six, ten or even twenty dollars per ton, by the pig iron manufacturers, is all right—it is business. Our members should carefully study these facts. The refusal of employers to submit question of wages to arbitration is based upon the knowledge and full appreciation of these facts. They dread their presentment to an unbiased person, knowing full well what the result would be, and preferring the arbitration of force, with the hope that such little secrets of the trade may remain locked in their own breasts."

One of the "little secrets of the trade" which the molders find it expedient to keep to themselves, is the fact that their labor is well paid. At a recent general convention of the iron molders' union, the following resolution was adopted:

Resolved, That it is unworthy of a member of this organization to talk in public places about how much money they make, as it works against the trade. 1. If there should be a strike or a lock-out, public opinion will be against us, and will decide in favor of our employers in all localities. 2. That this union, in convention assembled, do enjoin on every member to hold his peace, and it will be beneficial to all in time of strike or lock-out.

Had the gentleman who offered this resolution known enough to "hold his peace," the article above quoted would have appeared to better advantage in the columns of the *Iron Molders' Journal*.

A Substitute for Mica for Stove Lights.

Office of SCRANTON STOVE WORKS,
SCRANTON, PA., Nov. 2, 1874.

To the Editor of The Iron Age.—DEAR SIR: Since the illuminating principle in stoves has become so thoroughly established, and the consequent demand for mica has become so disproportionate to the supply, is it not possible for some of our chemists to produce some chemical substitute for the same that shall be cheaper and as durable? Illuminating stoves to the household are like pictures on the walls, refining and civilizing in their influence and tendency, and so great a boon to mankind should not be jeopardized by fear of any failure of the supply in an article that possesses the quality of so much pleasure and health giving comfort. Should this suggestion be within the possibilities of chemical combinations, a liberal reward would be paid by the stove manufacturers of the country. Very respectfully,

J. A. PRICE.

An Outlet for the Iron Trade.

The interesting statistics contained in the communication we recently published on the subject of narrow gauge railroads in America show that the system has made much more rapid progress than had been supposed, that it has been found to be peculiarly adapted, by its cheapness of construction and working, to a country like ours, where costly railways can only be made to pay in densely populated regions, and that the panic, which checked the construction of other lines of the standard gauge, did not interfere with the progress of the narrow gauge. It may be considered something marvelous that in a country where other gauges seemed to have the entire hold upon the public mind so much has been done for the new system. But in these days economy of construction and working is a grand desideratum, since it tells upon the ability of companies to pay interest and dividends, upon the question whether mountainous and sparsely settled regions shall have railways at all, and also upon the cost of freight and passenger transit.

In Pennsylvania this system assumes the character of an auxiliary to the main lines of broader gauge, and from the success it has thus far met with there is reason to believe that in time it will spread generally over the populous Middle States, and to a large extent supersede the use of the common roads. In mountainous regions this will certainly be the case. And if the system can be applied generally in the way we have noted, for local travel and traffic tributary to the main lines, it is obvious that an immense field is thus opened for the investment of American capital. What the horse railway does for local travel in cities the narrow gauge railway must do on a larger scale for local travel and freight in the rural districts. Many important main lines of railway suffer materially in their way business on account of the neglected condition of the common country roads, the effect of which is to diminish the amount of produce seeking shipment. The eminently practical mind of the late President Thomson referred to this in one of the annual reports of the Pennsylvania Railroad, and when the narrow gauge system came up he recognized that here was a practical substitute for the common road.

If we regard the system as applicable to this section merely in this light, it is difficult to tell where its construction would stop, for 10,000 miles of narrow gauge roadway would not more than answer the local needs of such State as Pennsylvania to take the place of the common roads, while New Jersey could easily support 3000 miles, and the peninsula between the Delaware and the Chesapeake the same amount. Here is an outlet for the American iron trade to which sufficient attention has not been paid. For while the building of lines of the standard gauge has stopped, the construction of street railways and narrow-gauge roads goes on uninterruptedly. That our city and State appreciate the opening more than other seaboard cities and States is seen in the fact that the interest in the system centers here, Pennsylvania having entered largely into it and many of the Western lines being owned here. The Baldwin Locomotive Works promptly commenced the making of narrow gauge engines, and a firm at Wilmington the manufacture of narrow-gauge cars.

In the West the new system has assumed a different character, and is likely to crystalize there into important masses of lines of considerable length, the Denver and Rio Grande line being longer than from Philadelphia to Washington, as already built, and its full project being over eight hundred miles. If this development were limited to Colorado, New Mexico and Utah the utility of the arrangement would be obvious, for there population is very sparse, trade and travel limited, and costly railroads not wanted, while cheap lines are needed for government uses as well as for emigration and the produce trade. But a disposition has been shown to build enormous through lines from Denver to St. Louis and similar enterprises, and these can only injure the business of the existing lines. If the main lines of standard gauge in Missouri and Kansas had a mass of short narrow gauge roads tributary to them all would pay, and the aids to settlement and business would be valuable.

Cheap transportation has now been the cry so long that no means of attaining it should be neglected. Not only is it demanded here, but in Europe also, for the narrow gauge system originated in Wales, and has now become an accepted means of relief from the cost of the standard gauge lines in the British isles, Sweden and Norway; is making progress in Russia and other countries, and is likely to be introduced in India and Australia. In our own country the general demand for cheap transit has led to tremendous schemes of water lines, for which the national government is asked to appropriate millions of money. To the farmer the question is so serious as to have led to a powerful and extensive secret organization. Well, here, in the new narrow gauge system, we have the means sought for without any government aid being required. Neither land grants nor endorsed bonds are asked, and the cost of construction and rolling stock is so cheap that the lines will pay a profit from the start. Here is an opening for Philadelphia capital, enterprise and industry. The beginning we have made in Pennsylvania, Colorado and Utah shows of what the new system is capable. It can and should be used in such a way as to make all our other railroad investments pay. But let us use the medicine here at home in the Middle States, while times continue so dull as at present.—*North American.*

Western Hardware Association—Minutes of the Convention.

CHICAGO, Oct. 13, 1874.

A convention composed of representatives from the various wholesale hardware houses of the West, met at the Tremont House, Chicago, Tuesday, October 13, 1874, at 11 a. m., for a general consultation as to the state of the trade, and for a better personal acquaintance with each other.

Mr. Seeberger, of Chicago, called the meeting to order, and nominated R. W. BOOTH, of Cincinnati, as chairman, who was unanimously elected.

JOHN CANTWELL, of A. F. Shapleigh & Co., St. Louis,
SOLON PRENTISS, of Prentiss Bros. & Co., Detroit,
JOHN NAZRO, of John Nazro & Co., Milwaukee,
were elected vice-presidents, and
JAS. M. HORTON, of William Blair & Co., Chicago,
was elected secretary.

The following delegates were present:

R. W. BOOTH, of R. W. Booth & Co., Cincinnati, Ohio.
C. T. ADAMS, of Howell, Gano & Co., Cincinnati, Ohio.
L. PAPPENHEIMER, of L. Pappenheimer & Co., Cincinnati, Ohio.
A. CLARK, of Dickson, Clark & Co., Cincinnati, Ohio.
WM. A. MCCALL, of W. A. McCall & Co., Cincinnati, Ohio.
JNO. CANTWELL, of A. Shapleigh & Co., St. Louis, Mo.
E. C. SIMMONS, of Simmons Hardware Co., St. Louis, Mo.
ROBERT WILLIAMS, of McLaran, Williams & Co., St. Louis, Mo.
JOHN NAZRO, of John Nazro & Co., Milwaukee, Wis.
E. H. STONE, of R. Raney & Co., Milwaukee, Wis.
C. SHEPARD, of C. Shepard & Co., Milwaukee, Wis.
JOHN PRITZLAFF, of John Pritzlaff & Co., Milwaukee, Wis.
R. H. JORDAN, of W. M. Wyeth & Co., St. Joseph, Mo.
WM. ANDREW, of Andrew & Tredway, Dubuque, Iowa.
G. STEPHENS, of Westphal, Hinds & Co., Dubuque, Iowa.
JAMES FLETCHER, of Ducharme, Fletcher & Co., Detroit, Mich.
T. BUHL, of Buhl, Ducharme & Co., Detroit, Mich.
SOLON PRENTISS, of Prentiss Bros. & Co., Detroit, Mich.
J. G. STANDART, of Standard Bros., Detroit, Mich.
J. WHITAKER, of Whitaker, Phillips & Co., Toledo, Ohio.
D. C. DE LAMATER, for C. B. James & Co., Detroit, Mich.
ROBERT SICKELS, of Sickels & Preston, Davenport, Iowa.
JAMES MORTON, of Nelson & Co., Burlington, Iowa.
C. W. BELDEN, of Brintnall, Terry & Belden, Chicago, Ill.
A. F. SEEBERGER, of Seeberger & Breakey, Chicago, Ill.
JOHN ALLING, of Markley, Alling & Co., Chicago, Ill.
A. R. MILLER, of Miller Bros. & Keep, Chicago, Ill.
A. C. BARTLETT, of Hibbard, Spencer & Co., Chicago, Ill.
JAS. M. HORTON, of Wm. Blair & Co., Chicago, Ill.
MR. CAREY, of Layman, Carey & Co., Indianapolis, Ind.

Mr. Seeberger moved the appointment of a committee, consisting of one from each locality represented, to report on Wednesday morning the form for a permanent organization. Adopted.

The Chair appointed: Cantwell, St. Louis, Mo.; Whitaker, Toledo, Ohio; Prentiss, Detroit, Mich.; Adams, Cincinnati, Ohio; Jordan, St. Joseph, Mo.; Morton, Burlington, Iowa; Sickels, Davenport, Iowa; Andrew, Dubuque, Iowa; Stone, Milwaukee, Wis.; Bartlett, Chicago, Ill.

Adjourned to 3 p. m.

Convention re-assembled at the appointed hour, the president in the chair.

A resolution, offered by Mr. Nazro, referring to traveling salesmen, was referred to a committee of five.

Chair appointed: Nazro, Seeberger, Williams, Clark and Standart.

Mr. Pappenheimer presented a resolution in reference to price lists, which, with other papers of a similar character, was referred to the following committee: Pappenheimer, Alling, Simmons, Stephens and Shepard.

Messrs. Belden, Fletcher, Prentiss, Standart and McCall were appointed a Committee on by-laws.

The remainder of the session was devoted to a free and informal discussion of subjects of general interest to the convention.

Adjourned to meet on Wednesday at 9 a. m.

The convention re-assembled at the appointed hour, and was called to order by the president at 9·30.

Minutes read and approved.

Mr. Cantwell, chairman of the committee on permanent organization, made a report, which was accepted, and acted upon by sections.

The premable and constitution were discussed, amended and adopted, and the committee discharged.

Adjourned at 1 p. m. to meet on Thursday, 9 a. m.

The association reassembled at the appointed time, the president in the chair.

Reading the minutes dispensed with.

The committee on by-laws made a report, which was accepted and adopted, and the constitution and by-laws were signed by all the firms constituting the Western Hardware Association.

On motion, it was ordered to prepare ballots for the election of officers for the ensuing year.

Bartlett and McCall were appointed tellers.

R. W. Booth, of Cincinnati, having received a majority of all the votes cast for president, was declared duly elected.

John Nagro, of Milwaukee, having received a majority of all the votes cast for vice president, was declared elected.

James M. Horton, of Chicago, having received a majority of all the votes cast for secretary and treasurer, was declared elected.

On motion, the elections were declared unanimous.

The committee on price lists made a report, which was amended and adopted in the following form:

Resolved, That it is the sense of this association that the secretary of the Western Hardware Association be instructed to issue a circular, signed by all the houses here represented, to the American manufacturers of hardware, requesting them to discontinue, as far as practicable, the use of all lists and discounts and printed quotations, either by circular or publication in papers.

Resolved, That we will give preference to those manufacturers who comply with the above request.

Resolved, That we, as jobbers, hereby agree to discontinue issuing printed prices, or any printed or written list with net prices or discounts attached, except such goods as have prices made for the retail trade by the manufacturers.

Resolved, That we will discontinue the selling or invoicing goods by discount as soon as we receive the co-operation of the respective manufacturers.

Resolved, That any person or firm sending out a circular shall mail a copy of each issue to each firm belonging to this association.

Resolved, That the thanks of this association be tendered to those manufacturers who have already adopted the system of selling their goods at net prices.

Mr. Nazro offered the following, which was unanimously adopted:

Resolved, That in the opinion of this convention, when prices of goods are established by the manufacturers, any deviation from the price and terms, in an indirect manner, by a credit or merchandise, or reduction in price of any other article, or any drawback to cover such indirect allowance, should and ought to be condemned as unmercantile and productive of demoralization, and we pledge ourselves to discountenance the practice.

Adjourned for half an hour to lunch.

The association reassembled promptly at 2 p. m.

Mr. Miller having announced the death of Edwin Hunt, of Chicago, moved the appointment of a committee to draft resolutions expressive of the sentiments of this association. Adopted.

The Chair appointed Miller, Bartlett and Seeberger, who reported the following resolutions:

WHEREAS, Edwin Hunt, one of the Fathers of the Western Hardware Trade, has been suddenly stricken from our ranks by the hand of death; be it

Resolved, That we deeply deplore the loss of one whose sterling integrity has made him an honor to the trade, and whose close attention to business and untiring industry in its transaction is an example worthy of our imitation.

Resolved, That our heartfelt sympathy is due, and is hereby tendered, to the relatives and friends of the deceased.

Resolved, That a copy of these resolutions be transmitted to the afflicted family.

Impressive and appropriate remarks were made by the president and Mr. Seeberger, when the resolutions were adopted unanimously.

The committee to whom was referred the resolution relating to traveling salesmen, presented the following report, which was adopted as a suggestion:

While your committee are of opinion that the traveling system, as it now exists, in its relation to business, its great expense, the unanimous opinion of its unprofitableness, a burden to the jobber, and productive of demoralization both to the buyer and seller, and in a measure tending to destroy the independence of the jobber, they believe it cannot be discontinued by us without a general breaking up of the system throughout the whole country. Travelers ought to be brought more under the control of their principals, and some action should be taken by this association looking to improvement in the system. Should any such action be taken, generally observed and carried out, the evils now existing might be to a great extent lessened. In view of these facts, we respectfully make the following suggestions:

That traveling salesmen be not furnished with the cost of goods, as a general rule. Each merchant to use his own discretion, but exercise it with great care.

That the salesman should not under any circumstances vary the price or terms of any goods given him by the house he represents, without first communicating all the facts in the case to his principals, and getting their authority to change.

That all travelers be held to a strict and detailed account of their expenses, and before accepting the services of a traveler from another house in the same line of business, a reference should be required from his last employer, if a member of this association.

That the system of what is termed "baiting" be discontinued both by the travelers and the jobbers, as evil in its tendencies and another cause of demoralization.

That no salesman be permitted to quote prices when he knows a competitor who is a member of this association has already sold the party, for the purpose of making the customer dissatisfied with the purchase recently made.

Mr. Adams offered the following, which was unanimously adopted:

Resolved, That this association approves the present system of prices and discounts adopted by the various manufacturers of horse nails, and recommend a continuance of the same.

Mr Seeberger offered a resolution, which was adopted as follows:

Resolved, That the manufacturers of steel and wood farming implements be notified that it is the wish of this association that they make such prices and terms for the season of 1875 as will insure a gross profit of 10 per cent. to the wholesale dealer, to be allowed at the end of the season; provided, the party claiming the allowance has not sold these goods at less than the manufacturer's published prices.

Mr. Pappenheimer offered the following:

Resolved, That the thanks of the visiting delegates to the first Convention of the Western Hardware Association are due in a high degree to our hardware brethren of Chicago for the warm welcome and generous hospitality which has made us, strangers in a strange city, feel as if we were enjoying the familiar society and comforts of home. Unanimously adopted.

It was decided by ballot that the next annual meeting should be held in Cincinnati, Ohio.

The association then adjourned, to meet in Chicago on the 12th day of January, 1875.

The Pennsylvania Steel Company commenced building their works in 1866, and, having made their first steel in the early part of 1867, have been in steady operation ever since, and each year steadily increasing the quantity and improving the quality of their products. The improvements completed during the past year enable the company to turn out over 100 tons of steel rails per day, and they frequently now roll up to 115 tons per day, a result that they are to be congratulated upon, since a few years ago 50 tons per day was the average daily product of the different Bessemer steel works. Steel rails are now sold at the prices asked for good iron rails two years ago, so that there cannot be any question as to the great economy of using steel on all roads of any considerable traffic. Most of the leading roads of the country have already announced their determination to lay only steel rails in future. Of all the branches of the iron industry the Bessemer steel industry seems now to be the most active. The American works are now able to supply the entire home demand, and are determined to do so regardless of foreign competition, and are even looking toward South America and Russia for their future markets.

A Wooden Railroad in Michigan.—The tram road of Van Etten, Kaiser & Co., manufacturers of rough and dressed pine lumber and lath, at Pinconning, Bay county, Michigan, is 11 miles long, and is thus described by the above firm in a communication to the Chicago *Railroad Gazette:* There are first logs laid crossways about five or six feet apart. The logs are from 12 to 16 feet in length. Then gains are cut in the logs and flatted timber laid in these gains; this prevents the road from spreading. Our rails are of hard maple. Before spiking the rails down we put ties across the stringers, notching the stringer enough to let the tie down even with the top of stringer and spike the tie fast before the rail is laid on. The ties are of 2-inch hemlock plank from 6 to 12 inches wide; this prevents the stringer from rolling. We would recommend any one who wishes to build a road on the above system to build it as straight as possible. We have some curves in our road, and we have been obliged to dispense with wooden rails on the curves and lay down iron. We operate our road with locomotive power. Cost of building without rolling stock is about $2000 per mile. The stringers are made from elm, oak, pine and ash, and are flatted on two sides to 10 inches in thickness.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Nov. 11, 1874.

The past week has witnessed considerable activity in Wall street, and, as a rule, the prices of securities have advanced. In the general markets a better feeling is reported, and trade is somewhat more active than last week. The money market continues easy to borrowers on call, who are freely accommodated at 2½ @ 3½ per cent. The discount rate on commercial paper is 5½ @ 7 per cent. for prime double endorsed, and 8 @ 12 per cent. for single names. The following is a comparison of the bank averages for the past two weeks:

	Oct. 31.	Nov. 7.	Differences.
Loans	$281,958,500	$285,066,500 Inc.	$3,108,000
Specie	12,021,100	12,574,800 Inc.	553,700
Leg. Ten	59,621,600	59,451,700 Dec.	169,800
Deposits	225,852,700	226,753,900 Inc.	901,200
Circulation	25,057,000	25,082,400 Inc.	25,400

The gold market has been very steady, the premium fluctuating between 110 and 110½. Cash gold has been borrowed on easier terms than last week. The following shows the highest and lowest daily quotations:

	Highest.	Lowest.
Thursday	110¾	110⅝
Friday	110⅞	110
Saturday	110¾	110
Monday	110⅞	110⅝
Tuesday	110¾	110⅝
Wednesday	110¾	110⅝

In the stock market there has been considerable activity, and the tendency of speculative shares has been decidedly upward. The principal transactions have been in Lake Shore, Western Union, Union Pacific, Ohio, Pacific Mail, Erie and Wabash. The highest and lowest of to-day prices of active shares are given below.

Government bonds have been steady at home and abroad, with foreign prices enough below those quoted in this market to make their importation profitable. Southern State bonds have acquired a decidedly better tone since the election, Northern bonds continue strong, and railway mortgages are advancing on a better demand for investment shares. We give below the closing prices of governments.

The following tables show the movements in foreign trade for the week:

IMPORTS.

	1872.	1873.	1874.
Total for week	$8,697,573	$5,022,754	$7,771,028
Prev. reported	369,078,729	338,466,015	332,185,779
Since Jan. 1	$377,776,302	$343,488,769	$339,956,807

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Anvils	135	$1,754
Brass goods	19	1,919
Bronzes	68	16,072
Chains and anchors	52	3,977
Cutlery	87	44,139
Gas fixtures	4	905
Guns	37	12,607
Hardware	69	5,234
Iron, pig, tons	950	22,844
Iron sheet, tons	18	1,561
Railroad bars	4,333	60,510
Iron cotton ties	1,173	3,563
Iron, other, tons	439	24,853
Lead, pigs	10,338	58,974
Metal goods	194	24,216
Nails	14	701
Needles	14	7,878
Old metal		1,598
Platina	1	2,977
Plated ware	51	1,170
Per. caps	21	3,100
Saddlery	5	1,008
Steel	2,743	30,491
Silverware	1	419
Tin, boxes	34,455	265,610
Tin, slabs, 4099	266,108	54,148
Wire	297	3,134

EXPORTS EXCLUSIVE OF SPECIE.

	1872.	1873.	1874.
For the week	$5 227,617	$7,229,773	$5,161,941
Prev. reported	194,540,084	250,359,474	245,631,598
Since Jan 1	$199,767,701	$257,589,247	$250,792,839

EXPORTS OF SPECIE.

Total for the week	$323,485
Previously reported	44,034,712
Total since January 1, 1874	$44,363,197
Same time in 1873	44,035,543
Same time in 1872	63,449,464

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency 6's	118¼	118¾
U. S. 6s 1881, reg	118¾	118¾
U. S. 6s. 1881, con	119¼	119¼
U. S. 1862, 5-20 reg	111¾	111¾
U. S. 5-20 1862, con	111¾	111¾
U. S. 5-20 1864, reg	113¾	113¾
U. S. 5-20 1864, con	114	114¼
U. S. 5-20 1865, reg	114¼	115
U. S. 5-20 1865, con	115	115¾
U. S. 5-20 1865, reg. new	117¼	117½
U. S. 5-20 1865, con	117¼	117¾
U. S. 5-20 1867, reg	118¼	118½
U. S. 5-20 1867, con	118½	118½
U. S. 5-20 1868, reg	118¾	118½
U. S. 5-20 1868, con	118¾	118¾
U. S. 10-40 reg	112¾	112½
U. S. 10-40 con	113	113½
U. S. 5s, 1881, reg	111¾	112
U. S. 5s, 1881, con	111¾	112

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	102¾	101
Lake Shore	82¾	81½
Rock Island	99	98¾
New Jersey Central	106¾	106¾
Del., Lack. and Western	109¾	109¾
Wabash	31½	31¼
Canton Land Co	58¾	56
Western Union Telegraph	79¾	79¾
Atlantic and Pacific Telegraph	19¾	19¾
Northwestern	39	38¾
" Pref	54¾	54¾
Milwaukee & St. Paul	34½	34½
Pacific Mail	45	44¾
Erie	29¾	28¾
Ohio & Mississippi	31½	30¾
Union Pacific	36	35½
C. C. & Ind. Central	11¾	10¾
Hannibal and St. Joseph	26¾	26
" Preferred	33	33
Quicksilver	32¾	31¾
Adams Express	117½	116¾
Wells, Fargo & Co. Express	79¾	79½
United States Express	64	64

GENERAL HARDWARE.

Trade continues in much the same condition noticed last week. Some houses report increased activity, while, on the other hand, many complain of dullness.

We print on the opposite page the minutes of the late convention of jobbers in Chicago. The resolutions in regard to price lists we published before, and this is the only action that has any general importance. As to travelers, they seem to have been very loose in their practice hitherto, or they would not have seen the necessity of adopting such "suggestions" as they did; and this one thing shows how much of the difficulty of their present situation is due to their own reckless competition. It will be worth while for our readers to read very carefully these suggestions about travelers as well as the resolutions about price lists; and they can then form their own opinion of the wisdom of the persons assembled in this convention, and the amount of good that will probably result therefrom.

When we first published the resolutions about price lists, we stated that their request would not and could not be complied with, and the time that has since elapsed has fully confirmed what we said. With the exception of one manufacturing concern that issued a circular before the meeting of this convention, stating that at present they would not publish any changes in price, but might be depended on to meet competition, we do not know of a single instance in which a manufacturer has made any change in his method of doing business, and even if some should do so, it is pretty certain that there will be enough left who are very ready to quote prices, and if the general knowledge of manufacturers' prices is incompatible with the success of the jobbing trade, they must modify their business or take the consequences. We should be sorry to see an influential and worthy trade come to grief, but changes in the methods of doing business are always going on, and if it is more advantageous for the small trade to buy of jobbers than of manufacturers direct, they will do so; if not, they will buy of the manufacturers, and nothing that either party can do will prevent it. Whatever happens as to the larger retail trade, there is a class of small dealers that the manufacturers and the large New York houses do not care to sell to, and who will naturally buy of some dealer near home. These are the legitimate customers of the local jobber, who must be paid for his capital and labor, and cannot afford to sell such a customer as cheap as a larger house could buy. If such a customer receives printed prices lower than the jobber can afford to sell at, the jobber must have backbone enough to insist on living rates or do a losing business.

We have received the following letter for publication:

HARDWARE JOBBERS AND PRICE LISTS.

Referring to the recent deliberations of a respectable portion of the Great American Hardware Family, at Chicago, with the charitable design of prescribing for the family's aches and pains, and promoting the general health and happiness, it seems clear to some interested and intelligent minds that an egregious failure has been made in the two vital necessities of the case, namely—in stating the real trouble and in prescribing the proper remedy. It is true that the jobbers, as a class, have been discouraged by many seasons of trade without profit, and that the present outlook is not such as to encourage them in expecting very speedy improvement. But while they are entitled to consideration and sympathy in the burdens they are bearing, they justly stand accused, before the whole hardware interest of the country, of an utterly narrow and *ex-parte* view of affairs, and of a selfish provision for their own interests manifestly at the expense of all other parties concerned.

The general aspect of business is one of demoralization both of prices and the well established methods of trade, equally unsatisfactory to the different classes interested, namely—the manufacturer, merchant and consumer—for while there are no profits to the former, by reason of excessive competition, there remains only exhorbitant prices for the latter occasioned by passage through many hands. Each are expensive and extravagant in his way. There are too many manufacturers, too many dealers and classes of dealers; there is an unhealthy and unnecessary competition between them; the proper relations of supply and demand do not exist—and in addition to it all there is a revolution in the way of doing business both demanded and actually in progress toward completion going hand in hand with the development of this country and the world, which enters as an important element in that interesting solution called "the condition of trade."

If this is a true statement of the case, it logically follows that the promises and conclusions of the Western Hardware Association rival each other in being narrow, selfish and unsatisfactory. They are the only parties aggrieved, and the remedy applied must be such as to fit their case only. Price lists and market reports are the whole cause of the trouble—therefore the abolition of price lists and market reports is the natural remedy. They are ordered discontinued. The decree is pronounced and the penalty is affixed. Now do you in New York, or you yourselves—ye Western jobbers in convention assembled—do you really believe that price lists and quotations are going to be discontinued? Would that be the way the 19th century does things? Allow that one or two manufacturers, for reasons we presume known to themselves, have done it, do you suppose that it can ever become general? I would respectfully, but seriously, doubt whether the jobbers themselves will adhere for any length of time to their own rule. In fact, if things were pressed, I think I might be persuaded to mention two instances where the law has already been broken by its makers. However, please don't "press things." The abolition of price lists would immediately result in a damage to the interests of what the writer would respectfully but confidently assert to be the two and only necessary and proper constituent parts of the hardware trade of the United States—namely, the manufacturer, or his representative in the general markets, and the retail dealer acting directly with the consumer. It would involve the manufacturer in largely increased expense in bringing himself and his product before the retailer, his only legitimate customer, and it would entail on the consumer a line of exorbitant prices entirely unnecessary, nor would it in any way tend to secure the ends required by the very merchants who make the request. As before intimated, the class of dealers known as exclusive jobbers are not in any sense a necessary or desirable part of the general hardware interest of the country. The existence of such a class involves an unhealthy and unmanageable competition with the manufacturer, absolutely, in many cases, so placing the latter that he cannot meet the market on his own goods. It presents a kind of dealers who speculate on prospective values, and then demoralize trade by slashing prices when necessary to unload—a kind who are of no assistance in introducing new articles, but of characteristic alacrity in speculating on them when introduced. In most of the large commercial cities of the world this class of dealers is nearly or quite extinct, and in their place we find the office of the manufacturer, or the agent who represents two or more manufacturers, through whom the product can be disposed of with more profit than to be dependent upon the jobber, who will not invest in new brands of goods, but only such as are already in constant demand

The natural solution of the whole matter is, first, the resumption of the proper and healthy relations between supply and demand; a stiffening up of the sound rules of credit, which will weed out a large class of irresponsible dealers; the now aggrieved class of exclusive jobbers assuming the proper position of dealers direct with the consumer, in other words, of retailers; then the habitual purchase of goods in such quantities as can be paid for at maturity, and with a reasonable prospect of their sale in the proper season at fair profits, each one having his own standard of prices, and not making them by those of a competitor. When such a state of affairs arrives, and not until then, there will be profit in trade, and the family will be prosperous and happy.

TRAVELER.

ST. LOUIS, Nov. 3, 1874.

A prominent jobbing house in Philadelphia sends us the following letter, which fully explains itself:

To the Editor of The Iron Age: In communication signed "Coffee Mill," in your issue of Oct. 29th, we notice a remark which we suppose refers to us, viz.: "There is in Philadelphia today a hardware jobbing concern that do an immense business and yet make no money, and, what is more, won't let any one else make any."

Now, we don't know who "Coffee Mill" is, or what he manufactures, but have to take your and his word for it that he is one of the largest and best known in his line of business; just what that business is, or how many others are in the same line, remains in the dark.

Assuming above remark refers to us, would say we are doing an immense business, but have never yet seen the year we did not make money, and might here add that we are not in business for glory; and when the time comes that we cannot make money by our way of doing it (which is to sell a large quantity of goods, at reasonable profits, make short credits and cash purchases), we will not continue. We think others that do business on the above basis will agree with us that there still is money in the jobbing Hardware business, and that manufacturers will find that they can do their business much cheaper through such houses than by going direct to the small trade, which, instead of being a detriment to the consumer, is really a benefit, by placing the goods to him in the cheapest manner.

If we knew who Coffee Mill was, we might throw some light on his apparent enmity to us. We can imagine no reason, without it is that he can afford to give the jobber so little margin that we cannot afford to handle his goods, therefore he cannot see how we can make any money.

It appears from another remark of his, about having to "compromise at 50 per cent., or extend one, two or three years without security or interest," that he has not been in the habit of selling goods to good cash paying jobbing houses, therefore his evidence is hardly admissable as to the profit in a manufacturer selling to such classes of houses.

His own remarks about his having to meet the jobber's prices on his own goods are arguments that jobbers can sell goods to the smaller trade lower than the manufacturer, and as we can see money in it, think our customers will not object to paying us less than they would by buying direct, and we still expect to give the benefit of our cash purchases to those buying the same way from us.

Sargent & Co. report having made the following changes since issuing their bulletin of September 25. All these prices are subject to their extra discount of 10 per cent. for prompt cash:

Page.
286¾, No. 374, Bronze Metal Butts.....dis. 60 %
286¾, No. 384, " Cap Butts.....60 %
288, 289, Strap and T Hinges.....35 %
292, Plate Hinges, Nos. 60, 62.....60&10 %
293, Hook Hinges, Nos. 66, 68.....60&10 %
595, Inside Blind Butts, L't Wrought.....40 %
595, Wrought Inside Blind Butts.....30 %
596, " Table Butts.....30 %
596, " Back Flaps.....30 %
597, L't Narrow Wrought Butts.....30 %
597, Narrow " .....30 %
598, Wrought Iron Butts, whole page.....35 %
603, Clark's Sash Locks.....25 %
630, Garden Trowels.....16⅔ %
650, Enterprise Tap Borers.....20 %

Nos.	1	2	3
Boring	¼ to 1¼	1¼ to 2	1¼ to 3 in.
Per doz	$18·00	24·00	36·00

670, Common Bench Planes.....45 %
671-683, Planes of all kinds.....20&10 %
688, Gauges, Butler's Patent.....45 %
689, " Scholl's " .....45 %
730, Self-Heating Irons.....5 %
724, Tea Scales.....16⅔ %
724, Counter Scales.....16⅔ %
725, Common Spring Balances.....20&10 %
726-731, Chatillon's Balances.....30&10 %
749, Yankee Alarm Door Bells.....30 %
" Gong Bells.....30 %
751, Thermometers, Nos. 30, 35.....50 %
752, Glass Curtain Pins.....45&5 %
752, Brass Escutcheon Pins.....10 %
757, Peerless Lanterns (No. 5, $11·75).....10 %
761, Hunt's Patent Razor Strops.....33⅓ %
762, Hindostan Stone and Slips.....20 %
" Axe Stone.....10 %
764, Oilers, Sheet Metal Screw:
" Zinc.....30 %
" Brass and Copper.....25 %
768, Refined Borax, 16¼ cents per lb.....net
770, Sheet Brass:

Nos.	0 to 20	21 to 23.	24 and 25
Lb.	$0·33	·34	·35

770, Sheet Brass:
14 in. and under, per lb.....$0·30
Over 14 in. to 20 in., per lb.....·36
Over 20 in. to 30 in. per lb.....
} net.

The Murray Iron Works, Burlington, Iowa, quote their celebrated Draw-Cut Butchers' Machines, Sausage Stuffers and Lard Presses, at the following list, less discount 20 per cent. to the trade:

Draw-Cut Meat Cutters.

No.	5	6	8
	$56·00	$90·00	$250·00

Draw-Cut Sausage Stuffers, No. 4.....$30·00
Draw-Cut Lard Press, 14 inch.....$65·00

Pugsley & Chapman, No. 6 Gold street, have in stock a lot of Railroad Picks, Polished Points, assorted, 6¼ to 7¾ lbs., which they warrant of best quality. They will close the lot out at $8 per dozen, net cash. They also have in stock a full line of Wheelbarrows and Store Trucks of their own manufacture, beside an assortment of Builders' and Shelf Hardware, which they offer at manufacturers' prices.

J. Clark Wilson & Co. have issued the following list of Wood Top Skates, manufactured by The Eagle Auger and Skate Co. As the assortments are not complete, these goods will be closed out in lots to suit purchasers at very low prices, which will be furnished on application.

Length of Wood.	Inch.	No.	Per pair.
D	8¾	3	$0·75
D	9	4	0·80
G	8¾	3	0·60
G	9	4	0·65
G	11	8	0·85
N, Wide Mortise	10	6	1·00
T	10	6	1·00
T	11	8	1·10
U	9¾	5	0·72
U	10	6	0·77
U	11	8	0·87
Y, Same style as U, C. S. Blade, Wide Mortise	11	..	1·50
X	8¼	3	1·00
X, Rocker	..	..	1·00

F. L. Kneeland, No. 70 Wall street, has issued under date of 12th instant, the following list for Dupont's Gunpowder, showing a reduction of four cents per pound on the price of Sporting, and two cents per pound on the price of Blasting Powder:

Canister Powder—In Cases 25 Each.

Diamond Grain, in Canisters of 1 lb. each	$1·02
Super. Eagle Sporting, in Canist'rs of 1 lb. each	·72
" " " ½ lb. "	·49
Eagle Rifle Shooting, " 1 lb. "	·72
Eagle Duck Shooting, " 1 lb. "	·72
Dupont Rifle, Fg, FFg and FFFg, in Canisters of 1 lb. each	·47
Dupont Rifle, Fg FFg and FFFg, in Canisters of ½ lb. each	·31
A. F. & Co., FFF, in Canisters 1 lb. each, oval	·29

Keg Powder.

Eagle Rifle Shooting, in Kegs, 6¼ lbs., Blue Covers	$3·57
Eagle Duck Shooting, Nos. 1, 2 and 3, in Kegs, 12½ lbs., Red Covers	7·13
Eagle Duck Shooting, Nos. 1, 2 and 3, in Kegs, 6¼ lbs., Red Covers	3·57
Eagle Duck Shooting, Nos. 1, 2 and 3, in Canisters of 5 lbs.	3·35
Cannon and Musket Powder, U. S. Government Proof	....
Dupont Rifle, FFg and FFFg, in Kegs, of 25 lbs	5·25
Dupont Rifle, FFg and FFFg, in Kegs of 12½ lbs	2·87
Dupont Rifle, FFg and FFFg, in Kegs of 6¼ lbs	1·57
Dupont Rifle, FFg and FFFg, in Canisters of 5 lbs	1·35
Dupont Fg, Sea Shooting, in Kegs of 25 lbs	5·25
A. F. & Co., FF and FFF, in Kegs of 25 lbs	4·75
Mealed Powder, in Kegs of 25 lbs	5·25
Mining and Shipping Powder, A—Mining F, FF, and FFF, grain, in Kegs of 25 lbs	3·75
Blasting Powder, B, in Kegs of 25 lbs	3·25

The following circular has been issued to the creditors of Rashcoe, Miller & Co.:

ST. LOUIS, Nov. 2, 1874.

Gentlemen—The St. Louis National Bank and United States Savings Institution, to whom we are indebted in the sum of thirty-seven thousand five hundred dollars, have this day commenced suit by attachment, and we are now unable to comply with the conditions of our assignment.

We therefore call again a meeting of our creditors to take such steps as may be necessary to prevent any preference these suits may give above parties. The meeting will be held at the Astor House, New York city, on Thursday, 12th inst, and you are urgently requested to be present, or represented by proxy.

(Signed) RASHCOE, MILLER & CO.

In Foreign Hardware business is very quiet, and prices remain as previously quoted. Mr. H. H. Beers, who is well known to many of our readers as traveler for the late firm of Beam & Murray, has transferred his services to Alfred Field & Co. As our readers are aware, this old established house have purchased the entire stock of Beam & Murray, and will in the future carry a full assortment of Wostenholm's goods, Butchers' Files, Tools, Razors, &c., in addition to their large lines of Foreign Heavy and Shelf Hardware.

We notice some improvement in the demand for Nails. There is no change to report in price, and we continue to quote 10d. at $3·60 @ $3·75, net. For orders of 200 kegs and over, $3·60 would be shaded.

The Eastern manufacturers have adopted the following revised discounts for Strap and T Hinges and Wrought Butts:

Strap and T Hinges	dis. 35&10 %
Narrow Butts	dis. 30&10 %
Back Flaps Butts	dis. 30&10 %
Inside Blind Butts	dis. 30 &10 %
Table Butts	dis. 30&10 %
Broad and Loose Joint Butts	dis. 35&10 %

Our quotation for Spring Balances, viz., discount 35 per cent., may be considered only nominal, as one of the manufacturers has quoted these goods at discount 50 per cent. for orders amounting to $500, and 50 and 5 per cent. for orders amounting to $1000.

The Brass Manufacturers held a meeting yesterday, and confirmed ruling rates.

We invite the attention of our readers to the advertisement of J. Clark Wilson & Co., on page 20, in which they illustrate the "Eureka" Can Opener, which they offer to the trade at $3·50 per dozen, net.

We announced last week the sudden death of Warren F. Shattuck. The business will be continued under the same style, "W. F. Shattuck & Co.," his widow and surviving partner, Edward Phelan, conducting the business.

Buck Brothers, Millbury, Mass., have issued the following list of Plane Irons and other tools as a supplement to their catalogue of 1871:

C, S. Cut Plane Irons.

Inches	1¼	1⅝	1¾	1⅞	1⅞
Per dozen	$2·12	2·13	2·12	2·13	2·19
Inches	1⅞	2	2¼	2¼	2⅜
Per dozen	$2·37	2·50	2·63	3·00	3·31
Inches	2¼	2⅜	2¾	2¾	3
Per dozen	$3·50	3·94	4·37	4·75	5·50

Skew Cut Plane Irons, 25 cents extra per dozen.
Cut Plane Irons polished on back same as on face, 10 cents extra per dozen.

C. S. Double Plane Irons.

Inches	1¾	1⅝	1¾	1⅞	1⅞
Per dozen	$4·06	4·06	4·06	4·06	4·19
Inches	1⅞	2	2¼	2¼	2⅜
Per dozen	$4·44	4·62	4·81	5·31	5·81
Inches	2¼	2⅜	2¾	2¾	3
Per dozen	$6·19	6·75	7·31	8·06	9·19

Skew Double Plane Irons, 63 cents extra per dozen.
Tooth Plane Irons to order.
Double Plane Irons polished on back side same as on face, and back iron polished, 40 cents extra per dozen.
20 to 25 per cent. advance—cash.

Net Cash Prices.	Per doz.
C. S. Flat Reamers, of superior quality	$1 80
" Square " " "	1·80
" Half Round Reamers, of superior quality	2·00
" Counter Sinks, of superior quality, for iron	2 00
Slotted or Forked Screw Driver Bits	1·62
Cabinet Maker's Burnishers, handled	3·00
Cooper's Bright Punches, assorted	1 50
C. S. Belt Awls	2 00
Ice Chisels, handled, for clearing sidewalks, or for cutting through the ice for fishing, 3 in	16·00
Ice Chisels, handled, for clearing sidewalks, or for cutting through the ice for fishing, 3½ in	18·00

BRITISH IRON MARKET.

(*Specially reported by cable for The Iron Age.*)

WEDNESDAY, Nov. 11, 1874.

Scotch Pig.—The market is active under a steady demand and large business, and prices are firmer.

Manufactured Iron and Rails are unchanged.

IRON.

American Pig.—The downward tendency in Iron, so far from being checked, seems now more decided than it has yet been, and the market is very much demoralized. There is no unanimity among the makers, but while some are holding their Iron steady, others seem willing to take what they can get. Stocks of Iron are accumulating, and it is no secret that large lots are being hypothecated; 1000 tons No. 1 Crane has been sold to a water pipe foundry at a price equal to $25·75, at Hoboken, cash paid on day of sale. The Thomas Iron Company report 1200 tons within the week at $28 for No. 1 Foundry, $26 for No. 2 Foundry, and $24 for Gray Forge. We quote nominally, Foundry No. 1, $27 @ $28; Foundry No. 2, $25 @ $27; Gray Forge, $23 @ $24.

Scotch Pig.—The market continues as it has been for some time past. There is no over supply, and arrivals seem to be sold previous to or upon receipt. The small quantity coming keeps it in fewer hands, and it is claimed that prices, although apparently high, do not cover cost and charges, with the lowest freight known for years. We quote: Coltness, $40 @ $41; Glengarnock, $39; Eglinton, $37.

Bar.—The Philadelphia mills are selling at 2·8 cents. Western mills are laying down Iron here at a little lower prices.

Rails.—We note the sale of 1100 tons Foreign in bond on private terms. We quote Welsh, $48 @ $50, gold, and American, $52 @ $55, currency, at works.

Old Rails.—In the absence of transactions we quote nominally $28 @ $30.

Scrap.—The trade is so stagnant that even a quotation is impossible.

METALS.

Copper.—The article is scarce, both on the spot and to arrive. Sales for the week sum up 200,000 pounds Lake, cash, on the spot at 22½c. @ 22⅝c., and 300,000 pounds December to March, inclusive, futures at 23c. @ 23½c. The latter are now firmly held at 24c. The position of Copper in our midst is an unusually strong one. Our leading brass manufacturing companies here and in the Eastern States have bought liberally, it is true, and from the neighborhood of 19c. have gradually followed up the market, first in small quantities, but increasing their purchases when 22c. was about reached, operating to a considerable extent also in futures; but in buying the latter they, as a general thing, anticipate their later requirements but partially, as they may be disappointed in the sale of their manufactures, however brisk the demand for them may be at the time. The smaller companies, on the other hand, have acted with a good deal of hesitation from the commencement. Having missed the lowest point, they lacked the courage to buy on an advancing market beyond their more immediate requirements, and the consequence has been that the market has been running away from them, compelling them to return to it constantly under the pressure of urgent wants. Should activity in the demand for Brass goods continue into the winter months, not only will these smaller concerns remain buyers, but even the large houses will have to secure an additional supply. While such is the case, the metal is as scarce and concentrated as ever, and we have at New York even telegraphic inquiries from the largest European banking houses, but leading to no dealings thus far. The fact is that English and Belgian cartridge manufacturers have made enormously large contracts with governments on the other side to deliver cartridges, and have not got all the Copper secured for them. While this semi-corner has been preparing on the other side, the Chilean charters, as per cablegram of Monday last, are again light, and the London market is gaining in strength daily. By telegram to hand direct to our office, Wallaroo, Australian, commands £97 to day, and Chili Bars remain at Monday's improvement of £1, being quoted at £88. Best Selected stood £95 on Monday. The improvement in Chili Bars since the 4th instant has been £2, and the telegrams add: "Stocks decreasing; tendency upward." That accounts like these, and the anxiety of the Europeans to secure a little more Lake Copper, should contribute to buoy up our own market is evident, and we close with great firmness at 22¾c., cash, asked. Baltimore is nominal at 22½c. Manufactures of Copper are steady as follows: New Sheathing, 28c. for over 13 oz.; Bolts and Braziers, 30c.; and Nails, 37c. @ 38c.; Bronze and Yellow Metal Sheathing, 21c. @ 22½c.; Yellow Metal Bolts, 28c.; and Yellow Metal Sheathing Nails, 22c.

Tin.—In our last we gave it as our opinion that Europe had, for the time being, touched bottom, and the telegrams to hand seems to confirm what we said. "LONDON, Nov. 9.—Straits Tin advanced to £94 per ton, against £93. 10/ on the 3d instant." "SINGAPORE, Nov. 5.—Malacca Tin, $24 per picul." On perusing the latest London accounts, it will be found that a good many of the later Australian Tin arrivals were not much admired in point of quality, and that Straits Tin is preferred for its uniformity and purity. This may, to a certain degree, help the latter, the more so as it is so largely dealt in "to arrive" on the other side; for a sale afloat absolute reliance on quality is indispensable. Tin has not improved in our own midst, although English Refined is known to be in light supply. We quote, with a moderate jobbing business doing, Straits, 21¼c. @ 21½c., gold; L. and F., 21¼c. @ 21½c.; English Refined, 21¾c.; and Banca, 25c. @ 25½c., all gold. Nothing has transpired in Tin afloat. Tin Plates are as dull and inactive as heretofore, and we quote as follows without change: I. C. Charcoal, $9·50 @ $9·75, gold, per box; I. C. Coke, $7·62½ @ $7·75; Coke Terne, $8·87½ @ $7; and Charcoal Terne, $8·50 @ $8·75, all gold.

Lead.—Government Lead continues to be held at 6·35c., gold, but nothing has transpired in that quarter. Of Domestic some 200 tons were disposed of during the week in small lots of 10 to 25 tons, at 6·27½c. @ 6·30c., gold. There is very little consumptive demand, the business

season for the metal being over, nor has anything been done in Foreign for the past fortnight. We quote the latter 6¾c., gold. The accounts to hand from Europe are uniformly favorable, and when the last mail left, dated October 25, they were apparently on the eve of another rise. Hardly any supplies were being received from the Peninsula. Telegrams were to hand from China, reporting scarcity and an advancing market. That remote country is an extensive consumer of Lead for tea box lining and other purposes, and as the same produces less of it than it consumes, a certain amount is shipped thither from Europe, and has been sent at intervals from New York and Boston, as well as from San Francisco. The latter place is the handiest one for the Chinese, and we have no doubt as to California's future in this respect. San Francisco now ships Lead to New York, and may eventually supply the Asiatic markets. Manufactured Lead is well supported at 8¾c. for Bar, Pipe and Sheet, less 10 per cent. to the trade.

Spelter and Zinc.—Domestic Spelter has been selling to a moderate extent, say some 80,000 pounds during the week, at 6¼c. @ 6⅝c., currency. In Foreign absolutely nothing has transpired, either on the spot or to arrive, from first hands; we therefore repeat our quotations: W. H., 7¼c., gold; C. G. H., 7c., do., and Silesian Union, 6¼c., do.; the range for Silesian thus remains 6⅛c. @ 7¼c., gold. Continental consumers have been buying English Spelter in England, compelling the English in their turn to get what they require in Silesia. This demand, together with the Continental French purchases, has strengthened the views of producers in the Silesian mountains; hence the metal, with moderate stocks everywhere, has remained quite firm in most of the metal centers. Sheet Zinc is quiet and firm at 8¾c. @ 9c., gold.

Antimony remains steady at the rates lately established of 11½c. @ 12c. gold.

OLD METALS, PAPER STOCK, &c.

Business in this market still continues very dull, and quotations remain without change. The market for Old Lead is still very active, and prices are strengthening, but not sufficiently so to alter quotations. The Rag and Paper Stock markets are unchanged, the demand being light and stocks are abundant. In other articles we have no improvement to report, and prices display weakness. We notice that some dealers have disposed of their accumulations of Wadding at 4 cents a pound, which is a low figure, considering the prices obtained heretofore. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5c.; Tea Lead, 4c.; Zinc, 4½c. @ 5c.; Pewter, No. 1, 19c.; do., No. 2, 8c. @ 12c.: Spelter, 5c. @ 5½c., Wrought Iron, 1½c.; Sheet do., ½c.; Cast, do., ⅜c. @ ¾c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No 1, 6c. @ 6½c.; No. 2, 2½c.; White, No. 1, 6c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 4½c. @ 5c.; Gunny Bagging, 1c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 3c. @ 3¼

COAL.

There is no perceptible improvement in the Coal market. Anthracite continues in fair retail demand at previous rates, but large lots are difficult to dispose of, as consumers generally are well supplied.

The quantity sent from the Schuylkill region for the last week by rail was 122,108 tons; by canal, 42,744—for the week, 164,852 tons, against 124,406 for the corresponding week last year, Increase, 40,446 tons. It will be observed that the shipments by canal reached 42,744—and the quantity sent for the week exceeded the quantity sent the previous week by canal and railroad 5330 tons. The quantity sent by canal we believe exceeds any previous week's shipment in the history of the trade.

The supply sent from all the regions for the week was 529,248 tons Anthracite, and 70,453 Bituminous—for the week 599,701 tons, against 515,756 for the corresponding week last year. Increase for the week 83,945 tons. The increase of Anthracite was 88,743 tons over the corresponding week last year.

The supply sent from all the regions so far this year is 18,735,047 tons, against 19,766,593 to corresponding period last year; decrease so far, 1,031,546 tons, of which 1,042,366 is Anthracite. As we are now gaining on the Anthracite trade of last year, the probability is that the supply of Anthracite this year will only fall short of last year's shipments about 1,000,000 tons. The trade, however, for November, will fall off considerably compared with that of October, as no further advance in prices will take place this year.

The following are the prices charged for Coals mined by the Philadelphia & Reading Coal and Iron Company, deliverable on board vessels at Port Richmond, Philadelphia, for the month of November. The Company reserve the right to withdraw or change these prices at any time during the month, except on sales made prior to such changes:

	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestn't.
	$	$	$	$	$	$
Hard White Ash Coal	5 05	5 15	5 25	5 40	5 90	4 45
Free Burning White Ash Coal	5 05	5 15	5 25	5 40	5 90	4 45
Schuylkill Red Ash Coal	....	....	5 40	5 50	5 95	4 55
Alaska Red Ash Coal	....	....	5 25	5 40	5 90	4 45
Shamokin Coal	....	....	....	5 40	5 90	4 45
North Franklin Coal	....	....	5 87	5 85	5 90	4 45
Lorberry Coal	....	....	6 20	6 20	6 20	4 80
Lykens Valley Coal	....	....	....	5 85	6 85	5 40

The market for Bituminous Coal is very quiet, and there is no change to report. The quotations for Anthracite are $5 @ $6·50 per ton by the cargo, and for Gas Coals the prices are: Cumberland, $6·25 @ $6·75; West Virginia, $7·40 @ $7·65; American Gas, $7 @ $7·75; James River Steam, $6·25 @ $6·50; Pennsylvania and Westmoreland, $7·50 @ $7·65; American Cannel, $12 @ $14.

The demand for Foreign has been light, and values have been nominally unchanged. We quote: Liverpool House Cannal, $17 @ $19; Liverpool Gas, $11; Newcastle Gas, $8; Scotch $8.

The quantity of Coal and Coke transported over the Pennsylvania Railroad, in tons of 2240 pounds, for the week ending Nov. 6, and for the year commencing Jan. 1, 1874, is as follows:

	Coal	Coke	Total.
Week	79,244	11,990	91,234
Previously	2,137,273	376,531	2,512,810
Total this year	2,216,517	388,521	2,604,044

This table embraces all the Coal carried over the road, both Anthracite and Bituminous, East and West.

The Coal transported over the Cumberland Branch Railroad during the week ending November 7, 1874, amounted to 6497 tons, as against 5719 tons shipped in the corresponding period of last year, showing an increase of 778 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 41,783 tons, against 56,272 tons shipped in 1873, a decrease of 14,489 tons.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending November 10, 1874:

Hardware.

Austin, Baldwin & Co.
Guns, cs.. 4
Boker Hermann & Co.
Mdse. pkgs., 10
Cases, 6
Degraw, Aymar & Co.
Chains, pcs., 3
Field A. & Co.
Mdse. pkgs., 29
Frasse P. A. & Co.
Stubbs' files, cks., 2
Hildick A. H.
Anvils, 25
Casks, 2
Chains, cks., 1
Chains, pcs., 3
Files, cks., 1
Jones S. D. & Co.
Revolvers, cs., 1
Lau & Garlichs.
Arms, cs., 13
Mdse. pkgs., 3
Laughland & Co.
Wire, bdls., 6
Locke & Montague,
Tinware, cs., 2
Cases, 1
Mason John W. & Co.
Wire rope, coils, 14
Moore's J. P. Sons,
Per. caps, cs., 8
Owens A.
Cutlery, cs., 1
Schoverling & Daly,
Arms, cs., 2
Tillotson L. G. & Co.
Gal. wire, lots, 596
Van Wart & McCoy,
Cases, 2
Woodford W. O.
Cutlery, cs., 1
Waefalaer & Duyster,
Iron hook nails, cs., 2
Order.
Files, cks., 32
Cases, 5
Wire, bdls., 1935
Cutlery, pkgs., 3

Iron.

Darrell & Co.
Casks, 23
Drexel, Morgan & Co.
Bars, 603
Henderson Bros.
Pig, tons, 200
Holdane, Hopkins & Stokes,
Hoop, cs.. 30
Laughland & Co.
Hay bands, bdls., 800
Lang W. Bailey & Co.
Fish plates, bdls., 1221
Ironwork, cs., 8
Bundles, 380
Bars, 91
Montell & Son,
Scrap, lots, 1
Naylor & Co.
Wire rods, coils, 387
Order.
Pig, tons, 700
Round iron rings, 787

Steel.

Hogan John,
Bessemer bars, bdls., 30
Bessemer bars, cs, 25
Casks, 3
Hugill Chas.
Cases, 8
Bundles, 79
Lang W. Bailey & Co.
Plates, 5
Naylor & Co.
Cases, 22
Richards C. B. & Boaz,
Cast, pkgs., 12
Sanderson Geo. & Co.
Casks, 10
Bundles, 49
Strouse Jacob & Co.
Sheet, cs., 1
Woodford W. O.
Cases, 60
Bundles, 1
Order.
Bundles, 745
Bars, 5
Barrels, 599
Spring, kilos, 16,430
Bessemer rods, bdls., 167
Tires, 8

Metals.

Brown J. B. & Co.
Copper, bbls., 11
Byrne Joseph & Co.
Tin plates, bxs., 820
Tin sheets, bxs., 20
Brown Bros. & Co.
Tin, slabs, 1551
Bruce & Cook,
Tin plates, bxs., 189
Baring Bros. & Co.
Lead, pigs, 1600
Tin, slabs, 257
Haxtum B.
Lead, pigs, 10,000
Jackson R. D.
Bar tin, bbls., 20
Jex Wm. & Co.
Copper, cks., 1
Copper, bbls., 1
Casks, 2
Montell & Son,
Scrap, pkgs., 23
Phelps, Dodge & Co.
Tin plates, bxs., 5371
Zinc, cks., 215
Windmuller L. & Roelker
Sheet zinc, cks., 100
Order.
Tin plates, bxs., 6748
Tin, bxs., 6835
Tin ingots, 332
Lead, pigs, 4409
Leaf zinc, cs., 7
Antimony, cks., 50
Tin, slabs, 575

PHILADELPHIA.

PHILADELPHIA, Nov. 10th, 1874.

The situation continues without material change, but shows a slightly better feeling as existing. The transactions in Pig metal are confined to actual necessities, but as in some cases these are increasing, the sales improve slightly in amount, although not at all in prices. The principal desire in the Pig Iron trade seems to be for each to recommend his neighbor to blow out his furnace, and yet to continue his own production. Under this state of affairs production cannot decrease nor prices improve except from actual demand. From some unexplained cause an increased demand is expected shortly, possibly—in the early spring, certainly. In Manufactured Irons, Bars are unsettled and prices nominal, the Philadelphia mills quoting 2·8 cents per lb. as their base, but meeting Western prices whenever possible. In Rails the improvement continues, and inquiries are numerous, while it is thought that the favorable tone of the London press toward American railway securities will have the effect to create a movement in new roads. The Steel Rail mills are comfortably off for orders, and are probably unlikely to book any more at as low prices as hitherto quoted. The Iron Rail mills are also receiving numerous specifications. We omitted to note a sale of 10,000 tons English Rails lately, on Texas account, and find the same road negotiating this week for some 20,000 tons more of American Iron. These, with other transactions pending, give considerable vitality to the market. In Old Rails there is comparatively little doing, and prices are weak. Scrap shares the same neglect and sales are few. Prices are continued as nominal, and are rarely given in connection with sales. Charcoal Pig is in over-abundant supply and prices at purchaser's option. We quote:

PIG IRON.—No. 1 Foundry, $28 to $29; No. 2, $25 to $26; Gray Forge, $24 to $25; White and Mottled, $18 to $20.

BARS.—2·8 cents per pound.

RAILS.—$52 @ $55, at works.

OLD RAILS—$29 to $30.

SCRAP—$32 to $33 for Wrought.

The sales include the following, viz.: 2000 tons Pig Iron, principally No. 2 and Forge; 2000 tons Pipe Iron; 500 tons White, and numerous small lots, all at about quotations. In Rails, we note sales of street Rails at $57, and contracts pending for 20,000 tons Iron for Texas delivery reported as a cash transaction. In Old Rails no sales of importance to note. Small lots of Scrap at prices quoted.

PITTSBURGH.

PITTSBURGH, Nov. 7, 1874.

PIG IRON.—There has been a fair degree of activity in Pig Iron during the past week, and while the sales were nearly all small, as the demand is still confined entirely to supplying the immediate wants of consumers, in the aggregate there was a fair business. The general tone and spirit of the market, however, continues in buyers' favor, and while there has been no quotable change in prices since the date of my last report, there has been a decline of fully one dollar per ton within the past month, and, furthermore, the tendency is still downward. Good Mill Irons, which about the 1st of October were held firmly at $26, 4 mos., can now be fairly quoted $25, 4 mos., and commission men report that it would be very difficult, if not impossible, to place anything like a round lot, say 1000 or even 500 tons, at the figure in question, as consumers are all determined to buy only as their immediate necessities require. Pig is one dollar per ton cheaper now than it has been at any time since the panic, and considerably lower than it has been, if I am not mistaken, since before the war, and, as already intimated, there is but little prospect of an advance; indeed, the producing interests are not as hopeful now as they were sixty days ago. Instead of holding for higher prices, as was the case during the latter part of the summer, the great object of producers now is to reduce the cost of manufacture, and while this has been accomplished to some extent, as both ore and labor are considerably cheaper, expenses generally will have to be still further curtailed in order to meet the market. If the production was entirely suspended for about three months it would have a very salutary effect on the market, and would be of incalulable benefit to the producing interest, as, to use a common phrase, it would enable them to get upon their feet again, but there is no hope of this, as some of the furnace companies are so situated that they cannot afford to blow out.

QUOTATIONS.

No. 1 Foundry	$28·00 @ 29·00—4 mos.
No. 2 Foundry	26·00 @ 27·00—4 mos.
Gray Forge	25·00 @ —4 mos.
White and Mottled	22·00 @ 23·00—4 mos.
Hot Blast Charcoal	30·00 @ 35·00—4 mos.
Cold Blast Charcoal	40·00 @ 50·00—4 mos.

MANUFACTURED IRON.—Trade, while it is perhaps about all that should be expected, is not what it usually is at this season of the year, and there is no disguising the fact that manufacturers generally have been considerably disappointed in the course of the market during the past sixty days. Orders are falling off, and the most of those coming forward are small, indicating that both jobbers and large consumers are carrying small stocks; but this very fact leads to the expectation of a heavy spring trade, which will open up early in 1875. As stated in my last report, prices are weak in sympathy with the raw article, but without quotable change as follows:

Merchant Bars	2·6—60 days.
Sheet Iron, Nos. 21 to 24	4·6—60 days.
Hoop Iron	4 8—60 days.

There is a better demand for both Hoop and Sheet than there is for Bars, but this has been the case all season. The mills, with one or two exceptions, are all in operation, and notwithstanding orders are falling off, and, furthermore, they are mostly small, there is little doubt but what the mills will have all they can do during the balance of the year.

NAILS.—The Nail trade continues quiet, as it usually is at this particular time, and the orders that are coming in are for small lots, indicating that jobbers, as well as consumers, are buying only to supply immediate wants, although it is not unusual at this season of the year. Prices are fully sustained—$3·35, 60 days, with usual discount of 2 per cent. for cash.

STEEL.—The Steel trade, while it is not as active by any means as we would like to have it, is, perhaps, about all that can reasonably be expected. Some of the mills are still pretty well supplied with orders, while others again are a little short, and, consequently, are not working up to their full capacity. Prices have undergone little or no change recently.

SCRAP IRON.—There is no improvement to note in the Scrap trade. The demand continues very meagre, while prices are nominally unchanged. Following are the ruling buying quotations:

	Per net ton.
Car Springs	$40·00
Car Axles	35·00
Railroad Scrap	27·50
Blacksmith Scrap	23·00
Machinery Metal	17·00
Stove Plate	13·00
Wrought Railroad Turnings	22·00
Boiler Plate	34·00
	Per gross ton.
Car Wheels	$25·00

THE WAGES QUESTION.—CONFERENCE BETWEEN A COMMITTEE OF THE PUDDLERS' UNION AND ONE FROM THE IRON MANUFACTURERS' ASSOCIATION.—The conference between a committee of the Puddlers' Union and one from the Iron Manufacturers, held on Saturday afternoon, came to no definite close. The facts and figures on which the manufacturers base their demand for a reduction of wages were submitted, and the matter was talked over at some length. On behalf of the manufacturers, the committee was composed of Messrs. Bennett, Brown, Wood and Lewis, and the latter, a member of the firm of Lewis, Bailey, Dalzell & Co., presided. The names of the puddlers' committee could not be ascertained, the meeting being secret, and they being particularly reticent about the details of the conference. The puddlers, in return, however, presented figures to the manufacturers showing that in the West prices for puddling were higher than in Pittsburg, and at some points East but a trifling sum less. They also stated that the figures presented by their employers (published on Saturday morning), were for rail mills only. The following they claimed to be the proper figures:

	Per ton.
Leechburg, Johnstown and Apollo	$6·00
Second district, comprising Wheeling, Steubenville, Ironton, Irondale, Columbus, Zanesville and Cleveland	6·25
Third district, comprising Covington, Newport, Portsmouth, Cincinnati, Louisville and vicinity, Indianapolis, Belleville, St. Louis and Terre Haute	6·50
Fourth district, comprising Chicago, Joliet, Milwaukee, Wyandotte and Springfield	6·50
Buffalo, N. Y., Niagara Falls forge	5·75
Newark	6·25
Fifth district, Troy, New York (six heats per ton)	4·80
Boiling iron (five heats)	5·55
Paterson, N. J.	6·75
Oxford furnace	5·00
Trenton, N. J.	5·55
Phœnixville, Pa.	5·00
Allentown Glen Mill	5·50
Eastern Pennsylvania and New Jersey are ruled by Philadelphia prices (helper paid 50 cents out of office)	5·50

No arrangement was effected between the parties, the puddlers' committee disclaiming any authority to take action before reporting to the parent body. They accordingly retired, and in their hall reported to the union. Here, too, the matter was thoroughly canvassed and certain points agreed upon, which are to be submitted to another conference, which takes place this afternoon. It was the general feeling yesterday that the puddlers did not intend to accede to the terms, and it is probable there will be a dead-lock for the winter.

The Pittsburgh *Commercial* of Nov. 7th says: There has been a little more inquiry for Pig metal the past week than for several weeks, but the price has not been affected, and still continues about the same as at date of our last report. Standard brands Gray Forge may still be quoted at $25, 4 months. We hear of offers a little below for prompt delivery and sharp cash, but can learn of no sales of good quality Iron at less than $25. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

300 tons gray forge	$25·00—5 mos.
230 tons gray forge	25·00—4 mos.
200 tons gray forge	25·00—4 mos.
200 tons gray forge	25·00—4 mos.
150 tons white and mottled	24·00—4 mos.
120 tons gray forge	25·50—4 mos.
100 tons gray forge	25·50—4 mos.
100 tons gray forge	25·00—4 mos.
100 tons white and mottled	23·00—4 mos.
75 tons No. 1 foundry, in lots	28·00—4 mos.
60 tons gray forge	27·00—4 mos.
50 tons close gray	24·50—4 mos.
20 tons No. 2 foundry	28·00—4 mos.
20 tons No. 1 foundry	27·00—4 mos.
10 tons gray forge	25·00—4 mos.

CONNELLSVILLE COKE.

700 tons gray forge	$25·00—4 mos.
50 tons gray forge	25·00—cash.
30 tons No. 2 foundry	26·50—4 mos.

ALLEGHENY COKE.

400 tons cold short	$27·00—time.
60 tons cold short	27·00—4 mos.

CHARCOAL.

60 tons Virginia	$35·00—6 mos.
75 tons Tennessee	31·00—4 mos.

BLOOMS.

10 tons Missouri	$80·00—cash.

CLEVELAND.

Messrs. READ & DICKEY, Iron Brokers, under date of Nov. 9, write us as follows:

PIG IRON.—The market presents no new features, and is becoming very monotonous for dealers and all interested in it. Buyers have it entirely in their control, but fail to use their advantage to the extent of making purchases, except as the lightest of wants dictate. The most hopeful fail to see any indications for change of a better feeling until after the first of the New Year, and it is, therefore, fair to presume that any change in prices which may occur in the meantime will be for the buyers' benefit. With money abundant the low figures at which round lots can be bought must soon attract speculation. We reproduce quotations of last week, which, although nominal, are as fair an indication of average prices as can be given.

CHARCOAL PIG IRON FROM L. S. ORE.

Nos. 1 and 2	$31·00 @ 32·00—4 m.
No. 3	33·00—4 m.
No. 4	34·00—4 m.
No. 5	36·00—4 m.
No. 6	38·00—4 m.
Bessemer Metal, Charcoal	32 00—4 m.
Bessemer Metal, Bituminous	28·00—4 m.

BITUMINOUS PIG IRON FROM L. S. ORE.

No. 1 Foundry	$28·00—4 m.
No. 2 Foundry	27·00—4 m.
No. 1 Gray Forge Open Red Short	25·50—4 m.
Close " or Neutral	24·50—4 m.
White and Mottled	22·50—4 m.

FOUNDRY IRONS FROM BLACK BAND AND NATIVE ORES.

Massillon No. 1	$33·00—4 m.
Massillon No. 2	31·00—4 m.
"New Gartsherrie" No. 2	33·00—4 m.
Muck Bar	$44·00—60 days.
Iron Rails, according to section	$56·00 @ $60·00—cash.
Steel "	85·00—cash

MANUFACTURED IRON—The demand continues to fall off, and the mills as a consequence are rapidly coming to the end of their orders. The present week is to witness a meeting in Pittsburgh, between makers and the representatives of the trades unions connected with iron making, with a view to rearrange the present one-sided sliding scale which has been so long in force. That considerable of a reduction in prices hitherto paid workmen will be effected we have no doubt, as we believe the unions themselves are prepared to accept terms more nearly in accord with prices paid in the East, but we do not believe their agreement, or the contrary, can now have much effect on the demand. Rails alone are in improved demand, but by no means active.

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Nov. 9, write us as follows: PIG IRON.—The tone of the market is unchanged, and the demand is only moderate. Foundry grades are taken sparingly. Some round lots have been sold, but at prices below current quotations. Forge Irons are selling to a limited extent. Car Wheel Irons are neglected, and dull. We quote:

HOT BLAST CHARCOAL.

Hanging Rock No. 1 ₩ ton	$31·00 @ 32·00—4 mos.
" " No. 2	28·00 @ 29·00—4 mos.
" " Forge	26·00 @ 27·00—4 mos.
Tennessee No. 1	30·00 @ 31·00—4 mos.
" Forge	26·00 @ 27·00—4 mos.
Alabama No. 1	30·00 @ 31·00—4 mos.
Missouri No. 1	31·00 @ 32·00—4 mos.
" No. 2	29·00 @ 30·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1 ₩ ton	$31·00 @ 32·00—4 mos.
" Forge	26·00 @ 27·00—4 mos.
Ohio No. 1	28·00 @ 29·00—4 mos.
" Forge	25·00 @ 26·00—4 mos.
Scotch Pig, No. 1	

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₩ tn.	$40·00 @ 50·00—4 mos.
Missouri " "	45·00 @ 48·00—4 mos.
Kentucky " "	43·00 @ 48·00—4 mos.
Tennessee " "	40·00 @ 48·00—4 mos.
Georgia " "	40·00 @ 45·00—4 mos.
Alabama " "	40·00 @ 45·00—4 mos.
Machinery and Forge	40·00 @ 45·00—4 mos
Blooms	75·00 @ 90·00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of Nov. 9, writes us as follows: The market is dull at quotations, and round lots cannot be sold except at some concession in price. There is not much disposition to force Iron on the market, and the sales are limited. The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$30·00 @ 33·00
" 2 " " " "	27·00 @ 28·00
" 1 Forge, " " "	25·00 @ 26·00
" 1 F'dry, from Tennessee Ores	28·00 @ 30·00
" 2 " " "	26·00 @ 27·00
" 1 Forge, " "	25·00 @ 26·00
" 1 F'dry, from Alabama Ores	28·00 @ 30·00
" 1 " " Iron Mountain Ores	30·00 @ 33·00

HOT BLAST STONE COAL.

No. 1 F dry, from Missouri Ores	30·00 @ 32·00
" 2 " " "	28·00 @ 30·00
" 1 Forge, " "	27·00 @ 28·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	45·00 @ 50·00
" " Tennessee Ores	43·00 @ 45·00
" " Alabama Ores	44·00 @ 46·00
" " Georgia Ores	44·00 @ 46·00
" " Missouri Ores	43·00 @ 45·00
" " Kentucky	43·00 @ 46·00

BALTIMORE.

Messrs. HOFFMAN, THOMPSON & Co., Iron commission merchants, 23 and 25 South Frederick street, under date of Nov. 10, report the Pig Iron market as follows: We have to report no change in prices, but rather more inquiry in Anthracite Irons. Charcoals, dull and neglected. We quote:

Baltimore Charcoal Pig Iron	$35·00 @ 38·00
Virginia " "	35·00 @ 37·00
Alabama " "	32·00 @ 34·00
Anthracite No. 1	29·00 @ 30·00
" No. 2	26·00 @ 28·00
" No. 3	25·00 @ 26·00
White and Mottled	18·00 @ 20·00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Oct. 25, 1874.—*Metals.*—Transactions in the European metal markets during the week have been limited in extent, and prices, on the whole, have been lacking in strength. This has been, in a measure, due to the uncertainties that have been ever changing the general money market for the past week or two, the watchword being, as usual, given from London. No further increase of the discount rate having been resolved upon at London for the time being, a slight easing has resulted therefrom at the close, and a better feeling now prevails. It cannot be denied, however, that the tendency is once more toward contraction in business circles, and that a general revival, which seemed to dawn upon the metal trade of Europe but a month ago, has been delayed. Considering, then, that the dull spell of winter will soon be upon us, to be followed later on by the holidays, it seems evident that we cannot look for much of an improvement during the remainder of this year's season. *Copper.*—The particulars of the latter part of September charters from the West Coast have at length come to hand, proving to have again been quite moderate, for they are but 1000 tons, and make up an aggregate not exceeding 3100 tons for the entire month, against 4200 in August. These statistics, combined with the dwindling stocks at Liverpool and Swansea, have not failed to come to the assistance of the English and Continental markets, and the feeling is apparently a much improved one since, with strong probabilities in favor of higher prices ruling shortly. Here, at least, we have again been on the rise since, and now quote Chili Bars, deliverable at Havre, 222·50 francs; Common do., 217; Ingots, 233·50; English Tough Cake, 227·50, and pure Corocoro Ore, 215. At Havre, Copper is firm at late quotations, without leading to much doing. Marseilles is rather more quiescent on the basis of 220, Refined Ingots. *Tin.*—The English and Dutch markets have been steering in contrary directions, and between the two the general Continental markets have been sorely puzzled. Early in the week the London market flagged, and continued so till at the close a slight rebound is perceptible, and a 10/ advance insisted upon. In Holland, on the other hand, Tin was firmly supported at first, Banca, spot, bringing as much as 57¾ guilders, in order to subsequently recede to 57¼. From what we have been able to ascertain, it would appear that the consumptive demand in Holland has been slackening, which does not prevent holders from maintaining an attitude of firmness. The consequence is that little is done in the end. Tin at Paris is well supported. Banca, deliverable at Paris and Havre, commands 262 francs; Straits, 247·50; and English, deliverable at either Havre or Rouen, 245. *Lead.*—The upward tendency of Lead in Europe has remained unchecked during the week, the lack of fresh supplies from Spain being severely felt. Thus, at London, Soft Spanish, without Silver, has been bringing £22. 10/, but holders decline to go on at this rate. Lead would command higher figures even now, but for the crippled condition in which some English Lead firms have been left at the time when early in the year they sustained such heavy losses, from which they have not yet fully recovered. Meanwhile, we have been telegraphically informed that Lead has risen considerably in the Chinese markets. Freight room being scarce, not much Lead will be shipped in that direction for the present, but eventually China will draw a supply from Europe. Lead was submitted to a slight recoil in our own (Paris) market, but at current prices there is a brisk demand. We quote 55·50 to 56 francs. At Marseilles, on the other hand, the advance has made further noteworthy progress. Little Lead arrives at Marseilles, and stocks are exhausted, while consumers appear to be bare of stock, and purchase whatever they can lay their hands upon. Future delivery for the remainder of the year is in brisk request. Dealers firmly insist upon 56 francs, an advance of 3 francs upon previous rates. The entire Lead situation turns upon the course of events in Spain. *Spelter*, though steady, is not over active. In England there is a good demand for English Spelter for the Continent, and in order to replace the same, English consumers are obliged to purchase Silesian at the places of production. No change can be reported in our own market. A slight downward reaction is telegraphed us from Marseilles. *Iron.*—Little change can be advised as having taken place in the French markets. The general state of affairs and outlook cannot be called less satisfactory than of late, although in the Loire district some works begin to complain. So far as the Rail manufacturers of France are concerned, it should, however, be mentioned that they are decidedly dissatisfied by reason of the competition which Belgian producers are making in the matter of Rails. If the Belgians can go on delivering Steel Rails at 266 to 275 francs, the prospect of any profit to be realized by our own Rail makers out of similar rates is a slim one indeed. The question is all the more serious, since Steel makers in France have been extending their works most energetically of late years. *Coal.*—The fine summer-like weather has disappeared, and we have now a much lower temperature, forcing consumers for domestic purposes to enter the market more resolutely. General activity in Coal has, nevertheless, not increased much, and no immediate rise need be apprehended.

BELGIUM.

(Le Commerce.)

BRUSSELS, Oct. 24, 1874.—*Iron.*—The Merchant and Pig Iron market in Belgium retains its attitude of tranquility, nor is there apparently any immediate prospect of an amelioration in this respect. Small orders, it is true, arrive daily, but larger commands continue scarce. An exception is noticeable as regards our Steel works, which seem to have work on hand for a long time ahead, but unfortunately the prices obtained by them are little remunerative indeed. Let us hope that these low rates may not have a deteriorating effect on the quality of Belgian Steel. When Iron declined, our Iron masters at once produced an inferior article, and the consequence has been that we have not recovered our lost prestige. In this manner we forfeited the market of Holland, a country which had been accustomed to take our Iron Rails, and the German Rail manufacturers of Bochum have secured the Dutch custom instead, furnishing cheap and tolerably well made Steel Rails in the place of our Iron ones. The Bochum people have not only ousted ourselves at the latest opening of tenders for Steel Rails in Holland, but also the remaining competitors, German, English and French. Aside from Holland, Saxony, also, all of a sudden, adopts Steel Rails instead of Iron, and invites tenders to the extent of 6000 tons. Not the shadow of a doubt now remains but what in a couple of years from now all the railroads of Europe will have replaced Iron Rails by Steel ones, thereby increasing the safety of life in traveling. The transformation of Iron works into Steel works extensively and actively proceeds in our country. *Coal.*—The future course of Coal prices seems to be pretty much understood not to be an upward one for some time to come, unless we have a mighty and favorable change in the general developments of industrial matters in Belgium. Our glass and sugar industries, it is true, are doing well, but they have long ago laid in a full Coal supply. Hence we are for the time being restricted almost altogether to the Coal trade for domestic wants, not important enough to produce a rise.

GERMANY.

(Borsenhalle.)

HAMBURG, Oct. 23, 1874.—*Metals.—Copper.*—Not much can be said with reference to the German Copper markets for the week under review. The general run of business has been quiet, but prices have been well sustained. We have on sale at Hamburg something like 30,000 quintals of Drontheim, but the same being held too high, it has been impossible to move any portion thereof worth recording. Swedish Copper here commands no more than 89 marks, while American Lake is worth 110. Both Berlin and Stettin are inactive. A decline has to be reported in *Tin*, and we remain at the reduced quotation of 106 for Banca and English Common here, and English Refined at 108. Berlin and Stettin present no new feature in this particular metal. *Lead* is as firm as ever; Spanish at Stettin is bringing 7¾ to 8 thalers; here we are steady at 24 to 24·50. German, and Spanish at 25 to 25·50. *Spelter* continues to look up,

especially at Breslau, which quotes C. G. H. and P. H. 7⅛ thalers, and W. H. 7⅛. Stettin is well supported at 8 to 8¼ thalers. We have relapsed into quietude here, and prices are nominal, without any official alteration.

HOLLAND.

(Evers & Co.)

ROTTERDAM, Oct. 24, 1874.—*Tin.*—Early during the week the market was firm, and *Banca*, spot, sold at 57¼ to 57¾ guilders, and delivery from the November sale at 57¼ to 57½. But by degrees a duller feeling manifested itself, Banca now being offered at 57¼ on the spot, and at 57¼ for November auction delivery.

EAST INDIES.

(Clark, Spence & Co.)

GALLE, Ceylon, Sept. 16, 1874.—*Plumbago.*—We scarcely hear of any transactions; there is little offering for sale, and, on the other hand, the demand is very slack. Without an advance in present quotations it would seem there is really, as has been frequently remarked, no inducement for diggers to operate.

(Aitken, Spence & Co.)

COLOMBO (Ceylon), Sept., 19, 1874.—*Plumbago*—Without change. Better prices have lately been fetched in London for good, bright qualities, and as the large stocks on hand are reported mostly of very inferior quality, we shall not be surprised to see some inquiry from home quarters set in before very long. P. S. 29th.—There is a little better inquiry from London; prices steady. Market is kept by dealers very bare of supplies. We quote, free on board with commission, exchange at par: Lump, 336/ per ton; Chips, 199/6; and Dust, 115/6. Season's export to England, 117,155 cwts.; to the United States, 37,669, and to other countries, 3535; together, 137,357 against 168,627 in 1873; 139,910 in 1872, and 82,255 in 1871. Exchange firm at 1/10⅝.

(Dummler & Co.)

BATAVIA, Java, Sept. 12, 1874.—*Tin.*—Billiton. The next sale will be held on October 12, and will comprise about 9000 piculs. *Iron.*—In Swedish sales have been made at a concession on last prices. English Bars have also been placed at a decline; in other descriptions there is little doing. *Copper Sheathing* is in limited request, but holders are firm. *Coal.*—Several cargoes of both English and Australian are offered afloat, but no transactions are reported. *Exchange* fairly active at 11¾ guilders the pound sterling, 6 months, London.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Oct. 26, 1874.

THE STATE OF TRADE

generally is tolerably steady, and there is more firmness in several branches than has been observable of late. There is, nevertheless, one notable exception to this otherwise pleasing state of things, and that is the rail trade, which remains sluggish. For iron rails, in particular, the inquiry is almost wholly confined to small orders for light sections suitable for colliery or street purposes. The Welsh works, by taking contracts as low even as £7. 2/6 per ton, are doing a limited business for South American and Turkish undertakings, there having been last month about 18,000 tons shipped from all the Welsh ports of all classes of iron. Of that total Cardiff contributed 8000 tons, and Newport 8700 tons, the balance being made up at the other ports. 18,000 tons of iron is a wretched production for the whole of the great establishments which rear their giant heads in the valleys of the little principality, hence we need not manifest much surprise at learning that the whole of the ironworkers have received notice of a further drop of 10 per cent. in wages. The plate trade, whether taken as the ordinary plate or tin plate departments, is not pressed with orders, albeit it is mentioned that a good Shropshire house is very busy. Hoops and sheets are sought after, there being an especially vivacious inquiry for Baldwin's "Wilden," Knight's "Cookley," "the Regents Grove" and the "Trident" brands. It is even stated that the producers of these best sheets have commissions on hand which will take them several months to execute. A statement of this kind would have had a "fishy" appearance a week or two back, but there is now some reason for supposing it to be well founded. Indeed, it appears very probable that with the exception of South Wales, and, to a certain and smaller extent, the Cleveland district, the now rapidly approaching winter will be tided over by the British iron trade in a contented manner, a content which may probably widen into a certain proportion of activity in the cases of the leading firms in any given industry.

TOUCHING POLITICS.

It is again asserted in well informed circles at Berlin that Germany is organizing her army and *means war*. In what direction these bellicose propensities will first be directed yet remains to be seen, but it is whispered that a sort of paternal inquisition will be set on foot in both Belgium and Switzerland in order to ascertain whether those two countries are able *to defend their neutrality*. The ostensible pretense for making this inquiry will be that either Belgian or Swiss territory might very well serve for the *via media* for a French army to issue forth from on a warlike expedition to the Fatherland, and that as the neutrality of Switzerland has been *acknowledged*, and that of Belgium *guaranteed* by Germany, she has the *right* to inquire into their capabilities on this head. "So far so good," we English may very well exclaim, with the mental reservation that we also have guaranteed Belgium, and that we have a far greater interest than any other country in the preservation of their autonomies by these little States. With the domain of politics proper we of this publication have little to do, but seeing that politics influence and direct commerce, it behooves us to keep a keen outlook for contingincies of all kinds. The late German-French war, without doubt, was the prime cause of the recent abnormal activity of our iron trades, and it is a well understood axiom that whatever tends to transfer the *German* population from peaceful to warlike occupations redounds to our advantage, inasmuch as it not only withdraws a formidable phalanx of competitors from the trade, but also (at the close of the fighting) creates an enormous demand for iron to replace that destroyed in structural and other appliances. This is, no doubt, a very low view of the horrors and destruction incidental to war in any cause and under any circumstances. It is, nevertheless, an indisputable fact and one which men of business cannot well fail to bear in mind in weighing up the probabilities of the trade outlook. There may not, it is quite true, be any rupture for a long time. Peace may prevail and commerce be ruled by its ordinary conditions. Still, appearances are ominous, and all the intelligence we are able to gather points to a disturbance of the peace of Europe.

SCOTCH PIG IRON.

Since I last wrote there has been a considerable depression in the prices of special brands of Scotch pig iron, partly owing to a reduced demand, and partly by reason of a steadier production. The stock in Connal's stores is very little in excess of 17,100 tons, a total which has not been greatly exceeded of late, so that it would appear that although the production is quite ample enough to supply the current demand, it is not so greatly in excess of it that iron has of necessity to be sent into store. There are now 119 furnaces in blast out of a total of 157. Writing on October 23d, from Glasgow, Messrs. James Watson & Co. report thus: "We have to report a comparatively steady market for Scotch pig iron, price of warrants fluctuating between 83/ and 81/6, closing to-day firm at 82/6, cash, rather buyers; it will be noted that quotations for principal shipping brands have been further reduced. Shipments last week were 10,140 tons, against 12,689 tons in the corresponding week of 1873. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	89/	79/
Gartsherrie, "	102/6	82/6
Coltness, "	102/6	82/6
Summerlee, "	98/6	80/6
Langloan, "	102/6	82/6
Carnbroe, "	94/6	80/6
Calder, at Port Dundas	105/	82/6
Glengarnock, at Ardrossan	96/6	81/6
Eglinton, "	87/	79/
Dalmellington, "	88/	79/
Shotts, at Leith	102/6	82/6
Kinnell, at Bo'ness	93/6	80/

Messrs. Wm. Colvin & Co., October 27th, say: The pig iron market has been exceedingly steady during the past week, the price of warrants remaining betwixt 82/ and 82/6. To day there has been rather a firmer feeling; warrants have been sold up to 83/, closing with buyers over, and makers' iron is rather firmer, at the undernoted prices:

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	89/	79/
Gartsherrie, "	102/6	83/
Coltness, "	105/	83/
Summerlee, "	98/6	80/
Carnbroe, "	94/	80/
Monkland, "	89/	79/
Clyde, "	89/	79/
Govan, at Broomielaw	89/	79/
Langloan, at Port Dundas	105/	82/
Calder, "	102/6	83/
Glengarnock, at Ardrossan	96/	81/
Eglinton, " "	87/	78/6
Dalmellington, " "	88/	78/6
Carron, at Grangemouth, selected.	100/	....
Shotts, at Leith	102/6	82/6
Kinnell, at Bo'ness	95/	80/
Bar Iron	£10	
Nail Rods	10	

SHIPMENTS.

	Tons.
Week ending 24th October, 1874	10,324
" " 25th October, 1873	11,435
Decrease	1,111
Total decrease since 25th December, 1873.	154,842

THE CLEVELAND DISTRICT

is fairly well off for orders of puddled bars, for pig iron on Dutch, Belgic and French account, as also for ship plates and other shipbuilding iron, but the district rail mills are by no means well employed. There have been about a dozen failures on the Tyneside within the past week. A local paper thus alludes to these break downs: "The failures which occurred on Tyneside last week were the source of a good deal of excitement and anxiety in business circles. But the fact was they had little to do with what may be called the legitimate business of that river. As before pointed out, several new houses came into existence during the time of high prices. Some of them, in the language of the turf, 'plunged' a great deal, and bought heavily. Business took another turn, and some establishments found themselves with a good amount of stock on hand which they could not realize except at a loss, and the rest may be quite understood. The failure of Messrs. John Softley & Co., iron shipbuilders, of North Shields, is likely to involve several establishments in loss, though the indebtedness is understood to be a good deal scattered. It is said their liabilities are about £55,000. The firm is stated to have taken their orders too low, and it is said that the liquidation will be unfavorable to the creditors."

THE TRADES OF SHEFFIELD.

In some branches of industry it is beginning to be apparent that, although they may not be subjected to any unusual pressure of orders, there will be a tolerably steady amount of employment throughout the coming winter months. To the majority of the manufacturers concerned, such a state of affairs will be far more satisfactory than an abnormal activity inducing the refusal of some commissions, the cancelling of others, and the generation of a state of rebellious independence on the part of the workmen. With a good inquiry for the leading articles of their manufacture, even if orders have to be accepted at an unusually low rate of profit, producers will not fail to tide over the cold period of the year with satisfaction to themselves and their customers. So far as we can at present ascertain there is not much probability of the price of fuel being enhanced beyond a merely nominal increase, there being a greatly augmented output from the local and district collieries, together with a closer competition owing to the large number of new pits recently opened out. This main source of anxiety being to that extent disposed of satisfactorily, it appears highly probable that the engineering, tool, foundry, brass and some few other departments will have an average amount of employment for the next six months.

The erection of new iron and steel works, the extension of those already in operation, the sinking of new collieries and other collateral undertakings have been, and are still being, the means of providing the foundries and engineering works with a great deal of work. Much of this is still in hand on account of orders received some time ago, and there are yet others of fair proportions on the books of several local establishments. Renewals of worn out and broken machinery are also a constant source of demand, particularly in the very heavy trades carried on in the eastern portion of this town. In this respect some powerful engines for rolling mills and other machinery have lately been fitted up as well as constructed by at least one local concern.

Machine tools are being freely produced, and edge tools are now in even better request than I stated last week. I learn that almost all the houses in this branch are doing a heavy business, and that the leading firms are in receipt of more orders than they can well get out of hand in a reasonable period. Workmen are scarce, but those obtainable in these instances have instructions to make as much time and turn out as much work as they like up to Christmas, at any rate, and possibly for much longer.

There is not much alteration in the demand for, or the prices of, ores and other raw materials. Spanish ores are nominally quoted at about 17/ to 19/ per ton at British ports, but there is not at present any quantity on offer, consequently no transactions of moment are recorded. So far as British hematites, which come chiefly from the West Lancashire and Cumberland districts, are concerned, I feel bound to correct a statement which has obtained currency to the effect that such ores are being offered at about 16/ to 17/ per ton. Such is not the fact. British red ores are being quoted at about 25/ to 29/ per ton at the mines Many descriptions of these ores—such as those mined at Eskatt Park, Salter and elsewhere in the Whitehaven locality—are not officially quoted just now, but are in each instance specially negotiated for. Ordinary ironstone of the "clay" quality is, however, being pretty freely bought at figures which are widely divergent, ranging from 14/6 to 23/ per ton, spot. Oolitic ores, which are much used by our blast furnaces, can be obtained at from 9/6 to 12/6 per ton, or at somewhat easier quotations when a heavy consignment is in question.

Pig irons are well maintained in value, as a rule, although instances are cited in which list figures are being "shaded" in favor of regular and large buyers. The Middlesborough agents here are doing pretty well in foundry pig. They hold No. 1, at 71/; No. 2, 68/6; and No. 3, at 66/ per ton. Forge qualities range from 55/ to 58/. Hematite pigs are not greatly changed. Maryport hematites, Nos. 1, 2 and 3, are 95/; No. 4, 90/; No. 5, M and W, 90/; Bessemer, No. 1, 100/; No. 2, 97/6; and No. 3, 95/ per ton, with the usual discount for prompt cash. Millom and similar productions are quoted: Bessemer, No. 1, 95/; No. 2, 92/6; No. 3, 90/; ordinary No. 3, 90/; No. 4, 87/6; No. 5, 87/6; M and W, 105/, on the customary 4 months' terms.

The cast steel trade is only indifferently employed, taking it as a whole. Some of the largest works are still running short time, there being little inquiry for the commoner qualities of steel. Mr. Mark Firth, of the firm of Thos. Firth & Sons, has consented to be elected Mayor of Sheffield for the ensuing municipal year, although he is not a member of the Town Council.

The statement, widely circulated on the authority of the Sheffield *Independent* of last Saturday, that Messrs. Charles Cammell & Co., limited, had abandoned the steel rail trade and discharged their men, is entirely untrue. The rail department of the Cyclops is, on the contrary, very actively engaged at present.

Foreign bar iron is in steady request at enhanced prices. Swedish ranges from £19 to £21, and Russian from £19 to £23. 10/ per ton. I hear of a large American order for these irons having been placed with a substantial Sheffield firm within the past week or two, but the exact price has not publicly transpired.

During September the Great Northern line took a considerably greater quantity of coal from South Yorkshire. Of Silkstones, 15,500 tons were taken as against 7900 tons in August, and of the Barnsley thick coal a much larger tonnage was conveyed to the metropolis. The coal trade generally is at present in a fairly brisk condition, especially for house coal. The manufacturers of silver and electro-plated ware, both at Sheffield and Birmingham, are in the enjoyment of a real period of prosperity, and are only prevented from clearing very heavy profits by the high price at which nickel is still quoted. A leading manufacturer of these goods informed me the other day that they had plenty of work on hand for all this year out, even if they did not receive another order up to Christmas. There is no appreciable change in cutlery, files or saws.

STEEL DIRECT FROM THE ORE.

La Metallurgie gives some account of the *Ponsard* system of producing steel direct from iron ore in a reverberatory furnace. This French journal gives a very glowing report of the result, and a somewhat vague description of the apparatus used for effecting the marvelous transformation. *La Metallurgie* says:

"On the 27th of September, at the forge of the Verrieres, at Vienne, France, the first production of pig iron by the direct treatment of the ore in the gas reverberatory furnace, system Ponsard, took place under the superintendence of the inventor, with the assistance of M. S. Perisse, director of the General Metallurgical Society of Paris.

"The apparatus, which has formerly been described, consists principally of a gazogene, which transforms the fuel into a series of large chambers, and of an apparatus in brick, called the recuperator of heat, which receives the flames from the furnace, and restores the caloric in the form of hot air. The compartments of the chamber serve successively for the reduction of the ore, for the reactions which are effected, and, finally, for the fusion of the whole charge in such a manner that the separation of the component parts is effected by the difference of density. These various phases of the operation require very different temperatures, and the production of these is the special object of the apparatus. On the side of the furnace doors the temperature is only that of red heat, while beyond the heat is so great that the eye is unable to support the intensity of the glow. This extraordinary heat is estimated at 2000° Cent.

"The success of the experiment is reported to have surpassed all expectation, and the result obtained is considered to demonstrate the possibility of producing steel direct from the ore without any of the transformations necessary under existing systems."

Iron very truly says that if the system justifies the report, it is, indeed, a revolution in metallurgical industry. Whatever may be the result of this French experiment, I can avow that

CAST STEEL DIRECT FROM PIG IRON

can now be made at Sheffield. I cannot in this communication enter into any details of the invention, or of the mode employed by the inventor, but I am assured by a shrewd, practical man that it is a perfect theoretical and practical success, and only requires putting before the world to be a great commercial one. He informs me that the thing has been done in a thorough manner; that it is a perfect cast steel produced at once and direct from the simple pig iron, and that a company will shortly be formed for the purpose of working it on a large scale. The cost of the cast steel so produced is said to be about half of that made in the present manner. I don't usually incline to the extravagant fancies of inventors, but I happen to know, in this instance, that the inventor is a thoroughly practical man. He has the management of a large concern here, and should know what he is about.

THE DARLASTON STEEL AND IRON COMPANY.

The report of the Darlaston Steel and Iron Company is scarcely satisfactory to the shareholders. The gross profits on the half year ending June 30, 1874, have amounted to £7152. 18/8. The general charges and interest on mortgages and debentures have amounted to £13,696. 12/11, leaving a debit balance on the half year's working amounting to £6543. 14/3. This deficiency is occasioned, so states the report, mainly by the colliers' strike, during which the production of the forges and mills was greatly diminished by the scarcity of coal, and serious loss was occasioned by the necessity of purchasing fuel at high prices to enable the company to fulfill its engagements and maintain its connections. In addition to these causes, a heavy fall has occurred in the value of iron.

STAFFORDSHIRE AND BIRMINGHAM.

There has been more doing in finished iron since the quarter days, and there seems some prospect of a large business being done very shortly in engineering and constructive iron. There is a good inquiry for rolls, and at the following figures: Chilled rolls of from 12 in. to 22 in. diameter are now £18. 10/ per ton, and the quotations run up from that figure to £24. 10/ for rolls of 6 and 7 inch diameter. Part-chilled and soft chilled rolls are £16 per ton for the larger, and £19 for the smaller sizes just mentioned. Grained rolls of 12 inch and upward are £10. 10/; grooved rolls of the same sizes are £11; pinions, £11. 10/; and housings, chocks, &c., for 12 inch trains and upward, £10. 10/. For guide roll housings £3 more is required. Hammers and anvils are £10; helves (open sand), £11; and bed plates (plain open sand), £9. 10/. Shafts, cast in the ordinary manner may now be bought at £11; and at £12 per ton those may be obtained which have been cast vertically. There are also reductions in the following articles: Axles, axes, blacksmiths' tongs, chains, all kinds of heavy hammers, shoe heels, horse shoes, boiler and other rivets and common vises. Best vises are firm. Lyndon's shovels, spades, etc., of the "best hammered" and "patent" kinds, are easier in consequence of the recent fall in B B H iron. Patent hinges have been dropped by an addition of 2½ per cent. per cwt. in the discount. Heavy washers are further declared down by 1/ per cwt., and light washers are 2½ per cent. more discount. There is a very strong inquiry for knees, locks, hinges, tin plate ware and pens. The American demand for pens has, however, fallen off by fully one-third—partly by reason of your own growing production and partly owing to the heavy impost under which English pens are laid by the duty of 10 cents per gross and 30 per cent. *ad valorem*. The Birmingham people grumble a good deal—and manage to do pretty well. I shall not deal at any length with the iron trade, but merely record that sheets are in active request at £13 to £17, marked bars at £10. 15/ to £11. 5/; common bars, £9. 10/ to £10. 10/; hoops at £11. 15/ to £12. 10, and rods at £10. 10/ to £11. 10.

THE SOUTH WALES DISTRICT.

The whole of the associated iron masters of South Wales have given notice of the termination of all existing contracts with their men, and of a reduction in the iron workers' wages of 10 per cent., to come into effect about Nov. 15. The men are taken by surprise, and have not as yet given any reliable indication of the course they will take. The associated coal masters of South Wales and Monmouthshire have determined to put their new contract rules into operation almost immediately. These rules will almost revolutionize the mode of living (and working) of the Welsh colliers, who have now no rules whatever but their own sweet inclinations. These rules will fix his time for beginning and leaving work; state that he must not be absent from work without permission, with several minor regulations. The district coal trade is good, but the iron works, with about two exceptions, are not enjoying any material amount of prosperity.

THE METAL MARKETS.

There was not much business doing in copper during last week, but tin has closed hands with average freedom, and several good sales of lead are reported as having taken place. Messrs. Von Dadelzen & North say that *Copper* has been dull, with very little doing. The price of Chili bars has declined to £81. 10/ for g. o. b., but late yesterday there appeared a firmer tone, and business reported at £82, cash. In Australian hardly any transactions reported. Wallaroo nominally £92; Burra, £91. English without change. *Tin.*—An average amount of business reported, chiefly in Australian, from £91 down to £90, which was the last price paid. Straits, on the spot, £92 to £92. 10/, and £91 to arrive. English tin firm; blocks and ingots, £97 to £98. The Dutch market is quiet; Banca, 57¼fl.; Billiton-54½fl. Tin plates continue in moderate demand, but there is no change in price. *Lead* has fully maintained the late advance—£22. 15/ to £23 now asked for good soft English pig. *Spelter.*—The market is firm, but no business reported; importers ask £24 for Silesian in warehouse here, *Quicksilver*, £23. 17/6 per bottle.

Messrs. French & Smith's circular says: "The past week metals were very quiet. *Iron.*—Staffordshire is in moderate demand. Rails are not much inquired for. Pig iron, of all sorts, is firm. *Copper.*—Chili bars, after being very strong at £83, have given away a little, and small sales are reported at £81. 10/; this afternoon there is a better feeling, and prices are quoted higher. *Tin.*—We have had some large sales of Australian, spot and just due, at £90. Straits is £92 and £92. 10/, spot; for arrival, £91. 10/. There is no alteration in Dutch prices of Banca or Billiton. The consumption is good. Tin plates are not quite so firm. *Lead* maintains its value, and continues scarce.

Messrs. Vivian, Younger & Bond say: "Prices generally are rather easier for the week, the apprehension of dearer money producing some uncertainty, though no advance in the bank rate took place yesterday as was expected. At the Swansea copper ticketing on Tuesday last, 1747 tons British and foreign ores sold at an average of 15/10 per unit, for an average produce of 14⅝ per cent., Cape ores of 28 per cent. realizing 16/3 per unit. Chili bars have been neglected, and prices are 20/ to 30/ easier, with sales down to £81. 5/ for good ordinary brands, and £83. 10/ to £82. 10/ for picked. In fine foreign very little passing, some sales of Wallaroo at £91. 2/6 to £91. 10/ for cake and ingot. Burra rather scarce at £90 to £90. 10/. English manufactured only in very moderate demand, £95 for sheets. Yellow metal at 8d. to 8¼d. Tough and selected £88 to £89, and £90 to £90. 10/ respectively. The improvement in tin, noticed in our last issue, has been partially lost under the influence of further arrivals of Australian slabs, which have sold at from 90/6 to 90/, both spot, landing, and for arrival in fair quantity. Straits has commaned 93/ for a few parcels on the spot, but is now 20/ lower, and for arrival 91/6. At the ticketing of Australian ores on Tuesday, 66 tons fine sold at £50. 10 to £56. 5/, eight tons good at £38. 10/, and four tons interior at £15. 10/. Seven tons Peruvian barilla at £37. 10/ to £45. Since the advance in English to £98 for common ingot the demand has been rather slack. Tin plates in fair request. Iron dull, and prices rather irregular, *Spelter.*—For English delivered £24. 10/, paid, and £23. 5/ to £23. 10/, spot and to arrive, for Silesian, according to brand. *Lead.*—Ordinary English shipping brands sold at £22. 12/6 to £22. 15/, with a fair business doing."

Messrs. Warner & Walduck's prices current (London, Oct. 22): "*Pig Iron.*—Scotch, from £4. 17/ to £5. 14/, ex steamer in Thames; north of England, £3. 2/6 to £3. 10/ (at works); hematite, £4. 10/ to £5 (at works). General castings, from £6 per ton (at works). *Bar Iron.*—Staffordshire "Champion" bars, £10. 10/; hoops, £11; sheets, £13; strip, £10; charcoal bars, £21; hoops, £22; sheets, £24; strip, £24 per ton (at works). North of England bars, £9. Tank plates, £11 (at works). Bolts and nuts, from £17. 5/ per ton. Spikes and rivets, from £12. 10/ per ton in London. *Tin Plates*—"Hendy" charcoal, extra fine quality, 38/ per box; "Gower" charcoal, 35/; "Rhos" coke, 30/6 per box; common coke plates, from 27/ per box. Rolled brass, 9¾d. per lb.; brass tubes, 12d. per lb.; copper tubes, 12¾d. per lb.; brass wire, 9¼ per lb.; copper wire, 12d. per lb.; telegraph wire, 12½d. per lb."

Messrs. J. H. Austin & Co.'s circular: "*Rails.*—American rails, 50 to 60 lbs. per yard, £7. 10/ to £8, f.o.b., Wales; ditto, Tyne or Tees; Russian and similar, 66 to 75 lbs. per yard, £7. 15/ £8. 5/, f.o.b., Wales; ditto, Tyne or Tees; street rails, £8. 10/ to £9. 10/, Tyne or Tees; steel rails, £10. 10/ to £11, Liverpool; and £10 to £10. 10/, Wales."

LATEST LIVERPOOL PRICES.

Iron; f. o. b. in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Merchant bar	9	7	6 to	9	10	0
Merchant bar, in Wales	9	0	0 to	9	2	6
Staffordshire	10	5	0 to	14	10	0
Hoop	11	10	0 to	12	10	0
Sheet	13	0	0 to	14	0	0
Nail rod	10	5	0 to	10	15	0
Bar, best crown	10	5	0 to	10	10	0
Boiler plates	12	5	0 to	13	5	0

Tin Plates; f. o. b. in Liverpool, per box.

	£	s.	d.	£	s.	d.
Charcoal, I. C.	1	16	0 to	1	19	0
Coke, I. C.	1	7	0 to	1	10	0

Copper; Delivered in Liverpool, per ton.

Bolt and Sheathing	£96
Tile	90
Tough cake	88
Best selected	90

LATEST LONDON METAL MARKET.

Copper.—Business limited, owing to absence of sellers. Chili, £82. 10/ to £82, cash, £83. 10/ three months. Australian unchanged. *Tin*, more business. Straits, £91. 10/ to £92 spot, £90. 10/ to arrive; Australian, £90. 10/ spot and to arrive. *Spelter*, unchanged. *Lead*, £23.

The Iron Interests of the James River Valley.

Although so little importance has heretofore been attached to the iron interests of this valley, the day is near at hand when it will be recognized as far beyond all others. All that is now required to assure this result is cheap coal, which the connections of the canal with the Chesapeake and Ohio Railroad will furnish.

The abundant supply of rich iron ores in the James River Valley is no longer a question. It is a fact, and capable of indisputable proof. These ores are of several varieties, the most abundant of which are the specular or peroxide, including red and brown hematite; limonite, or hydrous peroxide; and black or magnetic oxide. Specimens from a number of large deposits have been carefully analyzed, and yield from 45 to 67 per cent. of pure metallic iron. These specimens were selected with due reference to a working average.

Parties are engaged in mining at several points in this belt, and openings have been made at many other places with the view of ascertaining the extent and character of the deposits. The geological formation is a regular stratification, generally nearly vertical, with a few feet of soil on the surface. The veins are from ten to twenty feet in width, and in many cases very much wider, some of them being forty or fifty feet wide. These ores are easily reduced in the blast furnace, and are remarkably free from sulphur, phosphorus, and other injurious substances. The analysis has shown some of them to be absolutely neutral, which gives them special value for the manufacture of Bessemer steel. The quality of the iron which has been made from these ores is not a matter of speculation. Wherever known it is held in the highest estimation, and commands the very best prices. At a recent test made at Providence, R. I., with the government machine for testing gun metal, the following was the result: The Thomas, Pa., iron stood 18,000 pounds strain to the square inch; Cold Spring, N. Y., 17,000 pounds to the square inch; Poughkeepsie, N. Y., stood 19,000 pounds to the square inch; Powhatan, Va., stood 20,600 pounds to the square inch. Thus demonstrating the Virginia iron to be of superior strength to either of the other famous brands with which it was brought in comparison.

The face of the country for a considerable distance along the river is broken by a succession of bold mountain ridges running parallel with the river. These ridges are at intervals cut across by streams flowing into the river, greatly increasing the facilities for mining, and at many points furnishing good water-power.

Cheap ore is also a disideratum, whether for shipping or working. Experience proves that the different varieties of ores for mixing in the furnace can be collected here by contract for $3 a ton or less; if mined by the manufacturer they should not cost more than one-half that sum. These ores can be mined and put down on tide water at a cost of about $2·50 per ton; delivered in Philadelphia, the cost should not be more than $4 a ton for mining and transportation. While these ores offer a handsome profit to the shipper, it is to the establishment of iron works here that we look for the greatest benefit. With Kanawha coal at from $3 to $4 a ton we can defy all competition from whatever quarter. In confirmation of this statement, we have the authority of General Anderson, [of the Tredegar Works] for saying: "That while a ton of iron would cost from $28 to $30 when made in the Lehigh region of Pennsylvania, a ton of iron could be made in Virginia for $16." This calculation of General Anderson had reference to the use of the Kanawha coal along the line of the Chesapeake and Ohio Railroad. With the completion of the connection between the canal and that road, the James River Valley would possess advantages for iron manufactures not equalled by any other section of the United States.

At this time the manufacture of charcoal iron in this valley might be extensively carried on with great profit. There are thousands of acres of wood land convenient to canal or railroad transportation, which can be bought for $1·50 to $3 an acre, in bodies of 3000 to 6000 acres. If desired, contracts could be made for wood delivered on the canal at such prices as would furnish the best quality of charcoal at from 5 to 6 cents a bushel.—*Virginia Farm Journal.*

The Pequest Iron Works.

We take the following from the Washington (N. J.) *Star* of the 30th ult.:

About five years ago a number of gentlemen of this State organized the Pequest Iron, Mining and Manufacturing Company, for the purpose of mining iron ore and manufacturing iron. To carry out their project, they purchased a farm of 135 acres of Archibald Davidson, paying for the same the sum of $35,000. This farm was located in Oxford township, on the Pequest River and Delaware, Lackawanna & Western Railroad, about two miles from the Oxford Iron Works. They proceeded to explore for ore and

season for the metal being over, nor has anything been done in Foreign for the past fortnight. We quote the latter 6¾c., gold. The accounts to hand from Europe are uniformly favorable, and when the last mail left, dated October 25, they were apparently on the eve of another rise. Hardly any supplies were being received from the Peninsula. Telegrams were to hand from China, reporting scarcity and an advancing market. That remote country is an extensive consumer of Lead for tea box lining and other purposes, and as the same produces less of it than it consumes, a certain amount is shipped thither from Europe, and has been sent at intervals from New York and Boston, as well as from San Francisco. The latter place is the handiest one for the Chinese, and we have no doubt as to California's future in this respect. San Francisco now ships Lead to New York, and may eventually supply the Asiatic markets. Manufactured Lead is well supported at 8¾c. for Bar, Pipe and Sheet, less 10 per cent. to the trade.

Spelter and Zinc.—Domestic Spelter has been selling to a moderate extent, say some 80,000 pounds during the week, at 6¾c. @ 6⅞c., currency. In Foreign absolutely nothing has transpired, either on the spot or to arrive, from first hands; we therefore repeat our quotations: W. H., 7¼c., gold; C. G. H., 7c., do., and Silesian Union, 6⅞c., do.; the range for Silesian thus remains 6⅞c. @ 7¼c., gold. Continental consumers have been buying English Spelter in England, compelling the English in their turn to get what they require in Silesia. This demand, together with the Continental French purchases, has strengthened the views of producers in the Silesian mountains; hence the metal, with moderate stocks everywhere, has remained quite firm in most of the metal centers. Sheet Zinc is quiet and firm at 8¾c. @ 9c., gold.

Antimony remains steady at the rates lately established of 11½c. @ 12c. gold.

OLD METALS, PAPER STOCK, &c.

Business in this market still continues very dull, and quotations remain without change. The market for Old Lead is still very active, and prices are strengthening, but not sufficiently so to alter quotations. The Rag and Paper Stock markets are unchanged, the demand being light and stocks are abundant. In other articles we have no improvement to report, and prices display weakness. We notice that some dealers have disposed of their accumulations of Wadding at 4 cents a pound, which is a low figure, considering the prices obtained heretofore. We quote the following as the current purchasing rates:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5c.; Tea Lead, 4c.; Zinc, 4½c. @ 5c.; Pewter, No. 1, 19c.; do., No. 2, 8c. @ 12c.: Spelter, 5c. @ 5½c., Wrought Iron, 1½c.; Sheet do., ½c.; Cast, do., ½c. @ ¾c.; Machinery, do., ¾c.

Rags, &c.—Canvas, Linen, 5c. @ 5½c.; do. Cotton, No 1, 6c. @ 6¼c.; No. 2, 2½c.; White, No. 1, 6c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 4¼c. @ 5c.; Gunny Bagging, 1c.; Jute Butts, 1¾c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1¼c.; Grass Rope, 3c. @ 3¼

COAL.

There is no perceptible improvement in the Coal market. Anthracite continues in fair retail demand at previous rates, but large lots are difficult to dispose of, as consumers generally are well supplied.

The quantity sent from the Schuylkill region for the last week by rail was 122,108 tons; by canal, 42,744—for the week, 164,852 tons, against 124,496 for the corresponding week last year, Increase, 40,446 tons. It will be observed that the shipments by canal reached 42,744—and the quantity sent for the week exceeded the quantity sent the previous week by canal and railroad 5320 tons. The quantity sent by canal we believe exceeds any previous week's shipment in the history of the trade.

The supply sent from all the regions for the week was 529,248 tons Anthracite, and 70,453 Bituminous—for the week 599,701 tons, against 515,756 for the corresponding week last year. Increase for the week 83,945 tons. The increase of Anthracite was 88,743 tons over the corresponding week last year.

The supply sent from all the regions so far this year is 18,735,047 tons, against 19,766,593 to corresponding period last year; decrease so far, 1,031,546 tons, of which 1,042,366 is Anthracite. As we are now gaining on the Anthracite trade of last year, the probability is that the supply of Anthracite this year will only fall short of last year's shipments about 1,000,000 tons. The trade, however, for November, will fall off considerably compared with that of October, as no further advance in prices will take place this year.

The following are the prices charged for Coals mined by the Philadelphia & Reading Coal and Iron Company, deliverable on board vessels at Port Richmond, Philadelphia, for the month of November. The Company reserve the right to withdraw or change these prices at any time during the month, except on sales made prior to such changes:

	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
	$	$	$	$	$	$
Hard White Ash Coal	5 05	5 15	5 25	5 40	5 90	4 45
Free Burning White Ash Coal	5 05	5 15	5 25	5 40	5 90	4 45
Schuylkill Red Ash Coal	....	....	5 40	5 50	5 95	4 55
Alaska Red Ash Coal	....	....	5 25	5 40	5 90	4 45
Shamokin Coal	....	...	...	5 40	5 90	4 45
North Franklin Coal	....	....	5 85	5 85	5 90	4 45
Lorberry Coal	....	....	6 20	6 20	6 20	4 80
Lykens Valley Coal	....	....	....	5 85	6 85	5 40

The market for Bituminous Coal is very quiet, and there is no change to report. The quotations for Anthracite are $5 @ $6·50 per ton by the cargo, and for Gas Coals the prices are: Cumberland, $6·25 @ $6·75; West Virginia, $7·40 @ $7·65; American Gas, $7 @ $7·75; James River Steam, $6·25 @ $6·50; Pennsylvania and Westmoreland, $7·50 @ $7·65; American Cannel, $12 @ $14.

The demand for Foreign has been light, and values have been nominally unchanged. We quote: Liverpool House Cannal, $17 @ $19; Liverpool Gas, $11; Newcastle Gas, $8; Scotch $8.

The quantity of Coal and Coke transported over the Pennsylvania Railroad, in tons of 2240 pounds, for the week ending Nov. 6, and for the year commencing Jan. 1, 1874, is as follows:

	Coal	Coke	Total.
Week	79,244	11,990	91,234
Previously	2,137,273	376,531	2,512,810
Total this year	2,216,517	388,521	2,604,044

This table embraces all the Coal carried over the road, both Anthracite and Bituminous, East and West.

The Coal transported over the Cumberland Branch Railroad during the week ending November 7, 1874, amounted to 6497 tons, as against 5719 tons shipped in the corresponding period of last year, showing an increase of 778 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 41,783 tons, against 56,272 tons shipped in 1873, a decrease of 14,489 tons.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending November 10, 1874:

Hardware.

Austin, Baldwin & Co.
Guns, cs., 4
Boker Hermann & Co.
Mdse. pkgs., 10
Casks, 6
Degraw, Aymar & Co.
Chains, pcs., 3
Field A. & Co.
Mdse. pkgs., 29
Frasse P. A. & Co.
Stubbs' files, cks., 2
Hildick A. H.
Anvils, 25
Casks, 2
Chains, cks., 1
Chains, pcs., 3
Files, cks., 1
Jones S. D. & Co.
Revolvers, cs., 1
Lau & Garliehs.
Arms, cs., 13
Mdse. pkgs., 3
Laughland & Co.
Wire, bdls., 6
Locke & Montague,
Tinware, cs., 2
Cases, 1
Mason John W. & Co.
Wire rope, coils, 14
Moore's J. P. Sons,
Per. caps, cs., 8
Owens A.
Cutlery, cs., 1
Schoverling & Daly,
Arms, cs., 2
Tillotson L. G. & Co.
Gal. wire, lots, 596
Van Wart & McCoy,
Cases, 2
Woodford W. O.
Cutlery, cs., 1
Waefalaer & Duyster,
Iron hook nails, cs., 2
Order.
Files, cks., 32
Cases, 5
Wire, bdls., 1935
Cutlery, pkgs., 3

Iron.

Darrell & Co.
Casks, 23
Drexel, Morgan & Co.
Bars, 603
Henderson Bros.
Pig, tons, 200
Holdane, Hopkins & Stokes,
Hoop, cs., 30
Laughland & Co.
Hay bands, bdls., 800
Lang W. Bailey & Co.
Fish plates, bdls., 1221
Ironwork, cs., 8
Bundles, 380
Bars, 91
Montell & Son,
Scrap, lots, 1
Naylor & Co.
Wire rods, coils, 387
Order.
Pig, tons, 700
Round iron rings, 787

Steel.

Hogan John,
Bessemer bars, bdls., 30
Bessemer bars, cs, 25
Casks, 3
Hugill Chas.
Cases, 8
Bundles, 79
Lang W. Bailey & Co.
Plates, 5
Naylor & Co.
Cases, 22
Richards C. B. & Boaz,
Cast, pkgs., 12
Sanderson Geo. & Co.
Casks, 10
Bundles, 49
Strouse Jacob & Co.
Sheet, cs., 1
Woodford W. O.
Cases, 60
Bundles, 1
Order.
Bundles, 745
Bars, 5
Barrels, 599
Spring, kilos, 16,430
Bessemer rods, bdls., 167
Tires, 8

Metals.

Brown J. B. & Co.
Copper, bbls., 11
Byrne Joseph & Co.
Tin plates, bxs., 820
Tin sheets, bxs., 20
Brown Bros. & Co.
Tin, slabs, 1551
Bruce & Cook,
Tin plates, bxs., 189
Baring Bros. & Co.
Lead, pigs, 1600
Tin, slabs, 257
Haxtum B.
Lead, pigs, 10,000
Jackson R. D.
Bar tin, bbls., 20
Jex Wm. & Co.
Copper, cks., 1
Copper, bbls., 1
Casks, 2
Montell & Son,
Scrap, pkgs., 23
Phelps, Dodge & Co.
Tin plates, bxs., 5371
Zinc, cks., 215
Windmuller L. & Roelker
Sheet zinc, cks., 100
Order.
Tin plates, bxs., 6748
Tin, bxs., 685
Tin ingots, 332
Lead, pigs, 4409
Leaf zinc, cs., 7
Antimony, cks., 50
Tin, slabs, 575

PHILADELPHIA.

PHILADELPHIA, Nov. 10th, 1874.

The situation continues without material change, but shows a slightly better feeling as existing. The transactions in Pig metal are confined to actual necessities, but as in some cases these are increasing, the sales improve slightly in amount, although not at all in prices. The principal desire in the Pig Iron trade seems to be for each to recommend his neighbor to blow out his furnace, and yet to continue his own production. Under this state of affairs production cannot decrease nor prices improve except from actual demand. From some unexplained cause an increased demand is expected shortly, possibly—in the early spring, certainly. In Manufactured Irons, Bars are unsettled and prices nominal, the Philadelphia mills quoting 2·8 cents per lb. as their base, but meeting Western prices whenever possible. In Rails the improvement continues, and inquiries are numerous, while it is thought that the favorable tone of the London press toward American railway securities will have the effect to create a movement in new roads. The Steel Rail mills are comfortably off for orders, and are probably unlikely to book any more at as low prices as hitherto quoted. The Iron Rail mills are also receiving numerous specifications. We omitted to note a sale of 10,000 tons English Rails lately, on Texas account, and find the same road negotiating this week for some 20,000 tons more of American Iron. These, with other transactions pending, give considerable vitality to the market. In Old Rails there is comparatively little doing, and prices are weak. Scrap shares the same neglect and sales are few. Prices are continued as nominal, and are rarely given in connection with sales. Charcoal Pig is in over-abundant supply and prices at purchaser's option. We quote:

PIG IRON.—No. 1 Foundry, $28 to $29; No. 2, $25 to $26; Gray Forge, $24 to $25; White and Mottled, $18 to $20.

BARS.—2·8 cents per pound.

RAILS.—$52 @ $55, at works.

OLD RAILS—$29 to $30.

SCRAP—$32 to $33 for Wrought.

The sales include the following, viz.: 2000 tons Pig Iron, principally No. 2 and Forge; 2000 tons Pipe Iron; 500 tons White, and numerous small lots, all at about quotations. In Rails, we note sales of street Rails at $57, and contracts pending for 20,000 tons Iron for Texas delivery reported as a cash transaction. In Old Rails no sales of importance to note. Small lots of Scrap at prices quoted.

PITTSBURGH.

PITTSBURGH, Nov. 7, 1874.

PIG IRON.—There has been a fair degree of activity in Pig Iron during the past week, and while the sales were nearly all small, as the demand is still confined entirely to supplying the immediate wants of consumers, in the aggregate there was a fair business. The general tone and spirit of the market, however, continues in buyers' favor, and while there has been no quotable change in prices since the date of my last report, there has been a decline of fully one dollar per ton within the past month, and, furthermore, the tendency is still downward. Good Mill Irons, which about the 1st of October were held firmly at $26, 4 mos., can now be fairly quoted $25, 4 mos., and commission men report that it would be very difficult, if not impossible, to place anything like a round lot, say 1000 or even 500 tons, at the figure in question, as consumers are all determined to buy only as their immediate necessities require. Pig is one dollar per ton cheaper now than it has been at any time since the panic, and considerably lower than it has been, if I am not mistaken, since before the war, and, as already intimated, there is but little prospect of an advance; indeed, the producing interests are not as hopeful now as they were sixty days ago. Instead of holding for higher prices, as was the case during the latter part of the summer, the great object of producers now is to reduce the cost of manufacture, and while this has been accomplished to some extent, as both ore and labor are considerably cheaper, expenses generally will have to be still further curtailed in order to meet the market. If the production was entirely suspended for about three months it would have a very salutary effect on the market, and would be of incalculable benefit to the producing interest, as, to use a common phrase, it would enable them to get upon their feet again, but there is no hope of this, as some of the furnace companies are so situated that they cannot afford to blow out.

QUOTATIONS.

No. 1 Foundry	$28·00 @ 29·00—4 mos.
No. 2 Foundry	26·00 @ 27·00—4 mos.
Gray Forge	25·00 @ —4 mos.
White and Mottled	22·00 @ 23·00—4 mos.
Hot Blast Charcoal	30·00 @ 35·00—4 mos.
Cold Blast Charcoal	40·00 @ 50·00—4 mos.

MANUFACTURED IRON.—Trade, while it is perhaps about all that should be expected, is not what it usually is at this season of the year, and there is no disguising the fact that manufacturers generally have been considerably disappointed in the course of the market during the past sixty days. Orders are falling off, and the most of those coming forward are small, indicating that both jobbers and large consumers are carrying small stocks; but this very fact leads to the expectation of a heavy spring trade, which will open up early in 1875. As stated in my last report, prices are weak in sympathy with the raw article, but without quotable change as follows:

Merchant Bars	2·6—60 days.
Sheet Iron, Nos. 21 to 24	4·6—60 days.
Hoop Iron	4 8—60 days.

There is a better demand for both Hoop and Sheet than there is for Bars, but this has been the case all season. The mills, with one or two exceptions, are all in operation, and notwithstanding orders are falling off, and, furthermore, they are mostly small, there is little doubt but what the mills will have all they can do during the balance of the year.

NAILS.—The Nail trade continues quiet, as it usually is at this particular time, and the orders that are coming in are for small lots, indicating that jobbers, as well as consumers, are buying only to supply immediate wants, although it is not unusual at this season of the year. Prices are fully sustained—$3·35, 60 days, with usual discount of 2 per cent. for cash.

STEEL.—The Steel trade, while it is not as active by any means as we would like to have it, is, perhaps, about all that can reasonably be expected. Some of the mills are still pretty well supplied with orders, while others again are a little short, and, consequently, are not working up to their full capacity. Prices have undergone little or no change recently.

SCRAP IRON.—There is no improvement to note in the Scrap trade. The demand continues very meagre, while prices are nominally unchanged. Following are the ruling buying quotations:

	Per net ton.
Car Springs	$40·00
Car Axles	35·00
Railroad Scrap	27·50
Blacksmith Scrap	23·00
Machinery Metal	17·00
Stove Plate	13·00
Wrought Railroad Turnings	22·00
Boiler Plate	34·00
	Per gross ton.
Car Wheels	$25·00

THE WAGES QUESTION.—CONFERENCE BETWEEN A COMMITTEE OF THE PUDDLERS' UNION AND ONE FROM THE IRON MANUFACTURERS' ASSOCIATION.—The conference between a committee of the Puddlers' Union and one from the Iron Manufacturers, held on Saturday afternoon, came to no definite close. The facts and figures on which the manufacturers base their demand for a reduction of wages were submitted, and the matter was talked over at some length. On behalf of the manufacturers, the committee was composed of Messrs. Bennett, Brown, Wood and Lewis, and the latter, a member of the firm of Lewis, Bailey, Dalzell & Co., presided. The names of the puddlers' committee could not be ascertained, the meeting being secret, and they being particularly reticent about the details of the conference. The puddlers, in return, however, presented figures to the manufacturers showing that in the West prices for puddling were higher than in Pittsburg, and at some points East but a trifling sum less. They also stated that the figures presented by their employers (published on Saturday morning), were for rail mills only. The following they claimed to be the proper figures:

	Per ton.
Leechburg, Johnstown and Apollo	$6·00
Second district, comprising Wheeling, Steubenville, Ironton, Irondale, Columbus, Zanesville and Cleveland	6·25
Third district, comprising Covington, Newport, Portsmouth, Cincinnati, Louisville and vicinity, Indianapolis, Belleville, St. Louis and Terre Haute	6·50
Fourth district, comprising Chicago, Joliet, Milwaukee, Wyandotte and Springfield	6·50
Buffalo, N. Y., Niagara Falls forge	5·75
Newark	6·25
Fifth district, Troy, New York (six heats per ton)	4·80
Boiling iron (five heats)	5·55
Paterson, N. J.	6·75
Oxford furnace	5·09
Trenton, N. J.	5·25
Phœnixville, Pa.	5·00
Allentown Glen Mill	5·50
Eastern Pennsylvania and New Jersey are ruled by Philadelphia prices (helper paid 50 cents out of office)	5·50

No arrangement was effected between the parties, the puddlers' committee disclaiming any authority to take action before reporting to the parent body. They accordingly retired, and in their hall reported to the union. Here, too, the matter was thoroughly canvassed and certain points agreed upon, which are to be submitted to another conference, which takes place this afternoon. It was the general feeling yesterday that the puddlers did not intend to accede to the terms, and it is probable there will be a dead-lock for the winter.

The Pittsburgh *Commercial* of Nov. 7th says: There has been a little more inquiry for Pig metal the past week than for several weeks, but the price has not been affected, and still continues about the same as at date of our last report. Standard brands Gray Forge may still be quoted at $25, 4 months. We hear of offers a little below for prompt delivery and sharp cash, but can learn of no sales of good quality Iron at less than $25. We are reported the following sales:

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

310 tons gray forge	$25·00—5 mos.
230 tons gray forge	25·00—4 mos.
200 tons gray forge	25·00—4 mos.
200 tons gray forge	25·00—4 mos.
150 tons white and mottled	23·00—4 mos.
120 tons gray forge	25·50—4 mos.
100 tons gray forge	25·50—4 mos.
100 tons gray forge	25·00—4 mos.
100 tons white and mottled	23·00—4 mos.
75 tons No. 1 foundry, in lots	28·00—4 mos.
60 tons gray forge	27·00—4 mos.
50 tons close gray	24·50—4 mos.
20 tons No. 2 foundry	28·00—4 mos.
20 tons No. 1 foundry	27·00—4 mos.
10 tons gray forge	25·00—4 mos.

CONNELLSVILLE COKE.

700 tons gray forge	$25·00—4 mos.
50 tons gray forge	25·00—cash.
30 tons No. 2 foundry	26·50—4 mos.

ALLEGHENY COKE.

400 tons cold short	$27·00—time.
60 tons cold short	27·00—4 mos.

CHARCOAL.

60 tons Virginia	$35·00—6 mos.
75 tons Tennessee	31·00—4 mos.

BLOOMS.

10 tons Missouri	$80·00—cash.

CLEVELAND.

Messrs. READ & DICKEY, Iron Brokers, under date of Nov. 9, write us as follows:

PIG IRON.—The market presents no new features, and is becoming very monotonous for dealers and all interested in it. Buyers have it entirely in their control, but fail to use their advantage to the extent of making purchases, except as the light test of wants dictate. The most hopeful fail to see any indications for change of a better feeling until after the first of the New Year, and it is, therefore, fair to presume that any change in prices which may occur in the meantime will be for the buyers' benefit. With money abundant the low figures at which round lots can be bought must soon attract speculation. We reproduce quotations of last week, which, although nominal, are as fair an indication of average prices as can be given.

CHARCOAL PIG IRON FROM L. S. ORE.

Nos. 1 and 2	$31·00 @ 32·00—4 m.
No. 3	33·00—4 m.
No. 4	34·00—4 m.
No. 5	36·00—4 m.
No. 6	38·00—4 m.
Bessemer Metal, Charcoal	32·00—4 m.
Bessemer Metal, Bituminous	28·00—4 m.

BITUMINOUS PIG IRON FROM L. S. ORE.

No. 1 Foundry	$28·00—4 m.
No. 2 Foundry	27·00—4 m.
No. 1 Gray Forge Open Red Short	25·50—4 m.
Close " or Neutral	24·50—4 m.
White and Mottled	22·50—4 m.

FOUNDRY IRONS FROM BLACK BAND AND NATIVE ORES.

Massillon No. 1	$33·00—4 m.
Massillon No. 2	31·00—4 m.
"New Gartsherrie" No. 2	33·00—4 m.
Muck Bar	$44·00—60 days.
Iron Rails, according to section	$56·00 @ $60·00—cash.
Steel "	85·00—cash

MANUFACTURED IRON—The demand continues to fall off, and the mills as a consequence are rapidly coming to the end of their orders. The present week is to witness a meeting in Pittsburgh, between makers and the representatives of the trades unions connected with iron making, with a view to rearrange the present one-sided sliding scale which has been so long in force. That considerable of a reduction in prices hitherto paid workmen will be effected we have no doubt, as we believe the unions themselves are prepared to accept terms more nearly in accord with prices paid in the East, but we do not believe their agreement, or the contrary, can now have much effect on the demand. Rails alone are in improved demand, but by no means active.

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Nov. 9, write us as follows: PIG IRON.—The tone of the market is unchanged, and the demand is only moderate. Foundry grades are taken sparingly. Some round lots have been sold, but at prices below current quotations. Forge Irons are selling to a limited extent. Car Wheel Irons are neglected, and dull. We quote:

HOT BLAST CHARCOAL.

Hanging Rock No. 1 ₩ ton	$31·00 @ 32·00—4 mos.
" " No. 2	28·00 @ 29·00—4 mos.
" " Forge	26·00 @ 27·00—4 mos.
Tennessee No. 1	30·00 @ 31·00—4 mos.
" Forge	26·00 @ 27·00—4 mos.
Alabama No. 1	30·00 @ 31·00—4 mos.
Missouri No. 1	31·00 @ 32·00—4 mos.
" No. 2	29·00 @ 30·00—4 mos.

HOT BLAST STONE COAL.

Missouri No. 1 ₩ ton	$31·00 @ 32·00—4 mos.
" Forge	26·00 @ 27·00—4 mos.
Ohio No. 1	28·00 @ 29·00—4 mos.
" Forge	25·00 @ 26·00—4 mos.
Scotch Pig, No. 1	

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ₩ tn.	$40·00 @ 50·00—4 mos.
Missouri " "	45·00 @ 48·00—4 mos.
Kentucky " "	43·00 @ 48·00—4 mos.
Tennessee " "	40·00 @ 48·00—4 mos.
Georgia " "	40·00 @ 45·00—4 mos.
Alabama " "	40·00 @ 45·00—4 mos.
Machinery and Forge	40·00 @ 45·00—4 mos
Blooms	75·00 @ 90·00—4 mos.

LOUISVILLE.

Mr. GEO. H. HULL, under date of Nov. 9, writes us as follows: The market is dull at quotations, and round lots cannot be sold except at some concession in price. There is not much disposition to force Iron on the market, and the sales are limited. The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores	$30·00 @ 33·00
" 2 " " " "	27·00 @ 28·00
" 1 Forge, " " " "	25·00 @ 26·00
" 1 F'dry, from Tennessee Ores	28·00 @ 30·00
" 2 " " "	26·00 @ 27·00
" 1 Forge, " "	25·00 @ 26·00
" 1 F'dry, from Alabama Ores	28·00 @ 30·00
" 1 " " Iron Mountain Ores	30·00 @ 33·00

HOT BLAST STONE COAL.

No. 1 F dry, from Missouri Ores	30·00 @ 32·00
" 2 " " " "	28·00 @ 30·00
" 1 Forge, " " " "	27·00 @ 28·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores	45·00 @ 50·00
" " Tennessee Ores	43·00 @ 45·00
" " Alabama Ores	44·00 @ 46·00
" " Georgia Ores	44·00 @ 46·00
" " Missouri Ores	43·00 @ 45·00
" " Kentucky	43·00 @ 46·00

BALTIMORE.

Messrs. HOFFMAN, THOMPSON & Co., Iron commission merchants, 23 and 25 South Frederick street, under date of Nov. 10, report the Pig Iron market as follows: We have to report no change in prices, but rather more inquiry in Anthracite Irons. Charcoals, dull and neglected. We quote:

Baltimore Charcoal Pig Iron	$35·00 @ 38·00
Virginia " "	35·00 @ 37·00
Alabama " "	32·00 @ 34·00
Anthracite No. 1	29·00 @ 30·00
" No. 2	26·00 @ 28·00
" No. 3	25·00 @ 26·00
White and Mottled	18·00 @ 20·00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Oct. 25, 1874.—*Metals.*—Transactions in the European metal markets during the week have been limited in extent, and prices, on the whole, have been lacking in strength. This has been, in a measure, due to the uncertainties that have been overhanging the general money market for the past week or two, the watchword being, as usual, given from London. No further increase of the discount rate having been resolved upon at London for the time being, a slight easing has resulted therefrom at the close, and a better feeling now prevails. It cannot be denied, however, that the tendency is once more toward contraction in business circles, and that a general revival, which seemed to dawn upon the metal trade of Europe but a month ago, has been delayed. Considering, then, that the dull spell of winter will soon be upon us, to be followed later on by the holidays, it seems evident that we cannot look for much of an improvement during the remainder of this year's season. *Copper.*—The particulars of the latter part of September charters from the West Coast have at length come to hand, proving to have again been quite moderate, for they are but 1000 tons, and make up an aggregate not exceeding 3100 tons for the entire month, against 4200 in August. These statistics, combined with the dwindling stocks at Liverpool and Swansea, have not failed to come to the assistance of the English and Continental markets, and the feeling is apparently a much improved one since, with strong probabilities in favor of higher prices ruling shortly. Here, at least, we have again been on the rise since, and now quote Chili Bars, deliverable at Havre, 222·50 francs; Common do., 217; Ingots, 232·50; English Tough Cake, 227·50, and pure Corocoro Ore, 215. At Havre, Copper is firm at late quotations, without leading to much doing. Marseilles is rather more quiescent on the basis of 220, Refined Ingots. *Tin.*—The English and Dutch markets have been steering in contrary directions, and between the two the general Continental markets have been sorely puzzled. Early in the week the London market flagged, and continued so till at the close a slight rebound is perceptible, and a 10/ advance insisted upon. In Holland, on the other hand, Tin was firmly supported at first, Banca, spot, bringing as much as 57¾ guilders, in order to subsequently recede to 57¼. From what we have been able to ascertain, it would appear that the consumptive demand in Holland has been slackening, which does not prevent holders from maintaining an attitude of firmness. The consequence is that little is done in the end. Tin at Paris is well supported. Banca, deliverable at Paris and Havre, commands 262 francs; Straits, 247·50; and English, deliverable at either Havre or Rouen, 245. *Lead.*—The upward tendency of Lead in Europe has remained unchecked during the week, the lack of fresh supplies from Spain being severely felt. Thus, at London, Soft Spanish, without Silver, has been bringing £22. 10/, but holders decline to go on at this rate. Lead would command higher figures even now, but for the crippled condition in which some English Lead firms have been left at the time when early in the year they sustained such heavy losses, from which they have not yet fully recovered. Meanwhile, we have been telegraphically informed that Lead has risen considerably in the Chinese markets. Freight room being scarce, not much Lead will be shipped in that direction for the present, but eventually China will draw a supply from Europe. Lead was submitted to a slight recoil in our own (Paris) market, but at current prices there is a brisk demand. We quote 55·50 to 56 francs. At Marseilles, on the other hand, the advance has made further noteworthy progress. Little Lead arrives at Marseilles, and stocks are exhausted, while consumers appear to be bare of stock, and purchase whatever they can lay their hands upon. Future delivery for the remainder of the year is in brisk request. Dealers firmly insist upon 56 francs, an advance of 3 francs upon previous rates. The entire Lead situation turns upon the course of events in Spain. *Spelter*, though steady, is not over active. In England there is a good demand for English Spelter for the Continent, and in order to replace the same, English consumers are obliged to purchase Silesian at the places of production. No change can be reported in our own market. A slight downward reaction is telegraphed us from Marseilles. *Iron.*—Little change can be advised as having taken place in the French markets. The general state of affairs and outlook cannot be called less satisfactory than of late, although in the Loire district some works begin to complain. So far as the Rail manufacturers of France are concerned, it should, however, be mentioned that they are decidedly dissatisfied by reason of the competition which Belgian producers are making in the matter of Rails. If the Belgians can go on delivering Steel Rails at 266 to 275 francs, the prospect of any profit to be realized by our own Rail makers out of similar rates is a slim one indeed. The question is all the more serious, since Steel makers in France have been extending their works most energetically of late years. *Coal.*—The fine summer-like weather has disappeared, and we have now a much lower temperature, forcing consumers for domestic purposes to enter the market more resolutely. General activity in Coal has, nevertheless, not increased much, and no immediate rise need be apprehended.

BELGIUM.

(Le Commerce.)

BRUSSELS, Oct. 24, 1874.—*Iron.*—The Merchant and Pig Iron market in Belgium retains its attitude of tranquility, nor is there apparently any immediate prospect of an amelioration in this respect. Small orders, it is true, arrive daily, but larger commands continue scarce. An exception is noticeable as regards our Steel works, which seem to have work on hand for a long time ahead, but unfortunately the prices obtained by them are little remunerative indeed. Let us hope that these low rates may not have a deteriorating effect on the quality of Belgian Steel. When Iron declined, our Iron masters at once produced an inferior article, and the consequence has been that we have not recovered our lost prestige. In this manner we forfeited the market of Holland, a country which had been accustomed to take our Iron Rails, and the German Rail manufacturers of Bochum have secured the Dutch custom instead, furnishing cheap and tolerably well made Steel Rails in the place of our Iron ones. The Bochum people have not only ousted ourselves at the latest opening of tenders for Steel Rails in Holland, but also the remaining competitors, German, English and French. Aside from Holland, Saxony, also, all of a sudden, adopts Steel Rails instead of iron, and invites tenders to the extent of 6000 tons. Not the shadow of a doubt now remains but what in a couple of years from now all the railroads of Europe will have replaced Iron Rails by Steel ones, thereby increasing the safety of life in traveling. The transformation of Iron works into Steel works extensively and actively proceeds in our country. *Coal.*—The future course of Coal prices seems to be pretty much understood not to be an upward one for some time to come, unless we have a mighty and favorable change in the general developments of industrial matters in Belgium. Our glass and sugar industries, it is true, are doing well, but they have long ago laid in a full Coal supply. Hence we are for the time being restricted almost altogether to the Coal trade for domestic wants, not important enough to produce a rise.

GERMANY.

(Borsenhalle.)

HAMBURG, Oct. 23, 1874.—*Metals.*—*Copper.*—Not much can be said with reference to the German Copper markets for the week under review. The general run of business has been quiet, but prices have been well sustained. We have on sale at Hamburg something like 30,000 quintals of Drontheim, but the same being held too high, it has been impossible to move any portion thereof worth recording. Swedish Copper here commands no more than 89 marks, while American Lake is worth 110. Both Berlin and Stettin are inactive. A decline has to be reported in *Tin*, and we remain at the reduced quotation of 106 for Banca and English Common here, and English Refined at 108. Berlin and Stettin present no new feature in this particular metal. *Lead* is as firm as ever; Spanish at Stettin is bringing 7⅞ to 8 thalers; here we are steady at 24 to 24·50, German, and Spanish at 25 to 25·50. *Spelter* continues to look up,

especially at Breslau, which quotes C. G. H. and P. H. 7⅛ thalers, and W. H. 7¼. Stettin is well supported at 8 to 8⅛ thalers. We have relapsed into quietude here, and prices are nominal, without any official alteration.

HOLLAND.

(Evers & Co.)

ROTTERDAM, Oct. 24, 1874.—*Tin.*—Early during the week the market was firm, and *Banca*, spot, sold at 57¼ to 57⅛ guilders, and delivery from the November sale at 57¼ to 57⅜. But by degrees a duller feeling manifested itself, Banca now being offered at 57⅜ on the spot, and at 57¼ for November auction delivery.

EAST INDIES.

(Clark, Spence & Co.)

GALLE, Ceylon, Sept. 16, 1874.—*Plumbago.*—We scarcely hear of any transactions; there is little offering for sale, and, on the other hand, the demand is very slack. Without an advance in present quotations it would seem there is really, as has been frequently remarked, no inducement for diggers to operate.

(Aitken, Spence & Co.)

COLOMBO (Ceylon), Sept., 19, 1874.—*Plumbago*—Without change. Better prices have lately been fetched in London for good, bright qualities, and as the large stocks on hand are reported mostly of very inferior quality, we shall not be surprised to see some inquiry from home quarters set in, before very long. P. S. 29th.—There is a little better inquiry from London; prices steady. Market is kept by dealers very bare of supplies. We quote, free on board with commission, exchange at par: Lump, 336/ per ton; Chips, 199/6; and Dust, 115/6. Season's export to England, 117,155 cwts.; to the United States, 37,669, and to other countries, 2585; together, 137,357 against 168,627 in 1873; 139,910 in 1872, and 82,255 in 1871. Exchange firm at 1/10⅝.

(Dummler & Co.)

BATAVIA, Java, Sept. 12, 1874.—*Tin.*—Billiton. The next sale will be held on October 12, and will comprise about 9000 piculs. *Iron*—In Swedish sales have been made at a concession on last prices. English Bars have also been placed at a decline; in other descriptions there is little doing. *Copper Sheathing* is in limited request, but holders are firm. *Coal.*—Several cargoes of both English and Australian are offered afloat, but no transactions are reported. *Exchange* fairly active at 11¾ guilders the pound sterling, 6 months, London.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Oct. 26, 1874.

THE STATE OF TRADE

generally is tolerably steady, and there is more firmness in several branches than has been observable of late. There is, nevertheless, one notable exception to this otherwise pleasing state of things, and that is the rail trade, which remains sluggish. For iron rails, in particular, the inquiry is almost wholly confined to small orders for light sections suitable for colliery or street purposes. The Welsh works, by taking contracts as low even as £7. 2/6 per ton, are doing a limited business for South Ameritan and Turkish undertakings, there having been last month about 18,000 tons shipped from all the Welsh ports of all classes of iron. Of that total Cardiff contributed 8000 tons, and Newport 8700 tons, the balance being made up at the other ports. 18,000 tons of iron is a wretched production for the whole of the great establishments which rear their giant heads in the valleys of the little principality, hence we need not manifest much surprise at learning that the whole of the ironworkers have received notice of a further drop of 10 per cent. in wages. The plate trade, whether taken as the ordinary plate or tin plate departments, is not pressed with orders, albeit it is mentioned that a good Shropshire house is very busy. Hoops and sheets are sought after, there being an especially vivacious inquiry for Baldwin's "Wilden," Knight's "Cookley," "the Regents Grove" and the "Trident" brands. It is even stated that the producers of these best sheets have commissions on hand which will take them several months to execute. A statement of this kind would have had a "fishy" appearance a week or two back, but there is now some reason for supposing it to be well founded. Indeed, it appears very probable that with the exception of South Wales, and, to a certain and smaller extent, the Cleveland district, the now rapidly approaching winter will be tided over by the British iron trade in a contented manner, a content which may probably widen into a certain proportion of activity in the cases of the leading firms in any given industry.

TOUCHING POLITICS.

It is again asserted in well informed circles at Berlin that Germany is organizing her army and *means war*. In what direction these bellicose propensities will first be directed yet remains to be seen, but it is whispered that a sort of paternal inquisition will be set on foot in both Belgium and Switzerland in order to ascertain whether those two countries are able *to defend their neutrality*. The ostensible pretense for making this inquiry will be that either Belgian or Swiss territory might very well serve for the *via media* for a French army to issue forth from on a warlike expedition to the Fatherland, and that as the neutrality of Switzerland has been *acknowledged*, and that of Belgium *guaranteed* by Germany, she has the *right* to inquire into their capabilities on this head. "So far so good," we English may very well exclaim, with the mental reservation that we also have guaranteed Belgium, and that we have a far greater interest than any other country in the preservation of their autonomies by these little States. With the domain of politics proper we of this publication have little to do, but seeing that politics influence and direct commerce, it behooves us to keep a keen outlook for contingincies of all kinds. The late German-French war, without doubt, was the prime cause of the recent abnormal activity of our iron trades, and it is a well understood axiom that whatever tends to transfer the *German* population from peaceful to warlike occupations redounds to our advantage, inasmuch as it not only withdraws a formidable phalanx of competitors from the trade, but also (at the close of the fighting) creates an enormous demand for iron to replace that destroyed in structural and other appliances. This is, no doubt, a very low view of the horrors and destruction incidental to war in any cause and under any circumstances. It is, nevertheless, an indisputable fact and one which men of business cannot well fail to bear in mind in weighing up the probabilities of the trade outlook. There may not, it is quite true, be any rupture for a long time. Peace may prevail and commerce be ruled by its ordinary conditions. Still, appearances are ominous, and all the intelligence we are able to gather points to a disturbance of the peace of Europe.

SCOTCH PIG IRON.

Since I last wrote there has been a considerable depression in the prices of special brands of Scotch pig iron, partly owing to a reduced demand, and partly by reason of a steadier production. The stock in Connal's stores is very little in excess of 17,100 tons, a total which has not been greatly exceeded of late, so that it would appear that although the production is quite ample enough to supply the current demand, it is not so greatly in excess of it that iron has of necessity to be sent into store. There are now 119 furnaces in blast out of a total of 157. Writing on October 23d, from Glasgow, Messrs. James Watson & Co. report thus: "We have to report a comparatively steady market for Scotch pig iron, price of warrants fluctuating between 83/ and 81/6, closing to-day firm at 82/6, cash, rather buyers; it will be noted that quotations for principal shipping brands have been further reduced. Shipments last week were 10,140 tons, against 12,689 tons in the corresponding week of 1873. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	89/	79/
Gartsherrie, "	102/6	82/6
Coltness, "	102/6	82/6
Summerlee, "	98/6	80/6
Langloan, "	102/6	82/6
Carnbroe, "	94/6	80/6
Calder, at Port Dundas	105/	82/6
Glengarnock, at Ardrossan	96/6	81/6
Eglinton, "	87/	79/
Dalmellington, "	88/	79/
Shotts, at Leith	102/6	82/6
Kinneil, at Bo'ness	92/6	80/

Messrs. Wm. Colvin & Co., October 27th, say: The pig iron market has been exceedingly steady during the past week, the price of warrants remaining between 82/ and 82/6. To day there has been rather a firmer feeling; warrants have been sold up to 83/, closing with buyers over, and makers' iron is rather firmer, at the undernoted prices:

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	89/	79/
Gartsherrie, "	102/6	83/
Coltness, "	105/	83/
Summerlee, "	98/6	80/
Carnbroe, "	94/	80/
Monkland, "	89/	79/
Clyde, "	89/	79/
Govan, at Broomielaw	89/	79/
Langloan, at Port Dundas	105/	82/
Calder, "	102/6	83/
Glengarnock, at Ardrossan	96/	81/
Eglinton, "	87/	78/6
Dalmellington, "	88/	78/6
Carron, at Grangemouth, selected	100/	....
Shotts, at Leith	102/6	82/6
Kinneil, at Bo'ness	95/	80/
Bar Iron	£10	
Nail Rods	10	

SHIPMENTS.

	Tons.
Week ending 24th October, 1874	10,324
" " 25th October, 1873	11,435
Decrease	1,111
Total decrease since 25th December, 1873	154,842

THE CLEVELAND DISTRICT

is fairly well off for orders of puddled bars, for pig iron on Dutch, Belgic and French account, as also for ship plates and other shipbuilding iron, but the district rail mills are by no means well employed. There have been about a dozen failures on the Tyneside within the past week. A local paper thus alludes to these break downs: "The failures which occurred on Tyneside last week were the source of a good deal of excitement and anxiety in business circles. But the fact was they had little to do with what may be called the legitimate business of that river. As before pointed out, several new houses came into existence during the time of high prices. Some of them, in the language of the turf, 'plunged' a great deal, and bought heavily. Business took another turn, and some establishments found themselves with a good amount of stock on hand which they could not realize except at a loss, and the rest may be quite understood. The failure of Messrs. John Softley & Co., iron shipbuilders, of North Shields, is likely to involve several establishments in loss, though the indebtedness is understood to be a good deal scattered. It is said their liabilities are about £55,000. The firm is stated to have taken their orders too low, and it is said that the liquidation will be unfavorable to the creditors."

THE TRADES OF SHEFFIELD.

In some branches of industry it is beginning to be apparent that, although they may not be subjected to any unusual pressure of orders, there will be a tolerably steady amount of employment throughout the coming winter months. To the majority of the manufacturers concerned, such a state of affairs will be far more satisfactory than an abnormal activity inducing the refusal of some commissions, the cancelling of others, and the generation of a state of rebellious independence on the part of the workmen. With a good inquiry for the leading articles of their manufacture, even if orders have to be accepted at an unusually low rate of profit, producers will not fail to tide over the cold period of the year with satisfaction to themselves and their customers. So far as we can at present ascertain there is not much probability of the price of fuel being enhanced beyond a merely nominal increase, there being a greatly augmented output from the local and district collieries, together with a closer competition owing to the large number of new pits recently opened out. This main source of anxiety being to that extent disposed of satisfactorily, it appears highly probable that the engineering, tool, foundry, brass and some few other departments will have an average amount of employment for the next six months.

The erection of new iron and steel works, the extension of those already in operation, the sinking of new collieries and other collateral undertakings have been, and are still being, the means of providing the foundries and engineering works with a great deal of work. Much of this is still in hand on account of orders received some time ago, and there are yet others of fair proportions on the books of several local establishments. Renewals of worn out and broken machinery are also a constant source of demand, particularly in the very heavy trades carried on in the eastern portion of this town. In this respect some powerful engines for rolling mills and other machinery have lately been fitted up as well as constructed by at least one local concern.

Machine tools are being freely produced, and edge tools are now in even better request than I stated last week. I learn that almost all the houses in this branch are doing a heavy business, and that the leading firms are in receipt of more orders than they can well get out of hand in a reasonable period. Workmen are scarce, but those obtainable in these instances have instructions to make as much time and turn out as much work as they like up to Christmas, at any rate, and possibly for much longer.

There is not much alteration in the demand for, or the prices of, ores and other raw materials. Spanish ores are nominally quoted at about 17/ to 19/ per ton at British ports, but there is not at present any quantity on offer, consequently no transactions of moment are recorded. So far as British hematites, which come chiefly from the West Lancashire and Cumberland districts, are concerned, I feel bound to correct a statement which has obtained currency to the effect that such ores are being offered at about 16/ to 17/ per ton. Such is not the fact. British red ores are being quoted at about 25/ to 29/ per ton at the mines Many descriptions of these ores—such as those mined at Eskatt Park, Salter and elsewhere in the Whitehaven locality—are not officially quoted just now, but are in each instance specially negotiated for. Ordinary ironstone of the "clay" quality is, however, being pretty freely bought at figures which are widely divergent, ranging from 14/6 to 23/ per ton, spot. Oolitic ores, which are much used by our blast furnaces, can be obtained at from 9/6 to 12/6 per ton, or at somewhat easier quotations when a heavy consignment is in question.

Pig irons are well maintained in value, as a rule, although instances are cited in which list figures are being "shaded" in favor of regular and large buyers. The Middlesborough agents here are doing pretty well in foundry pig. They hold No. 1, at 71/; No. 2, 68/6; and No. 3, at 66/ per ton. Forge qualities range from 55/ to 58/. Hematite pigs are not greatly changed. Maryport hematites, Nos. 1, 2 and 3, are 95/; No. 4, 90/; No. 5, M and W, 90/; Bessemer, No. 1, 100/; No. 2, 97/6; and No. 3, 95/ per ton, with the usual discount for prompt cash. Millom and similar productions are quoted: Bessemer, No. 1, 95/; No. 2, 92/6; No. 3, 90/; ordinary No. 3, 90/; No. 4, 87/6; No. 5, 87/6; M and W, 105/, on the customary 4 months' terms.

The cast steel trade is only indifferently employed, taking it as a whole. Some of the largest works are still running short time, there being little inquiry for the commoner qualties of steel. Mr. Mark Firth, of the firm of Thos. Firth & Sons, has consented to be elected Mayor of Sheffield for the ensuing municipal year, although he is not a member of the Town Council.

The statement, widely circulated on the authority of the Sheffield *Independent* of last Saturday, that Messrs. Charles Cammell & Co., limited, had abandoned the steel rail trade and discharged their men, is entirely untrue. The rail department of the Cyclops is, on the contrary, very actively engaged at present.

Foreign bar iron is in steady request at enhanced prices. Swedish ranges from £19 to £21, and Russian from £19 to £23. 10/ per ton. I hear of a large American order for these irons having been placed with a substantial Sheffield firm within the past week or two, but the exact price has not publicly transpired.

During September the Great Northern line took a considerably greater quantity of coal from South Yorkshire. Of Silkstones, 15,500 tons were taken as against 7900 tons in August, and of the Barnsley thick coal a much larger tonnage was conveyed to the metropolis. The coal trade generally is at present in a fairly brisk condition, especially for house coal. The manufacturers of silver and electro-plated ware, both at Sheffield and Birmingham, are in the enjoyment of a real period of prosperity, and are only prevented from clearing very heavy profits by the high price at which nickel is still quoted. A leading manufacturer of these goods informed me the other day that they had plenty of work on hand for all this year out, even if they did not receive another order up to Christmas. There is no appreciable change in cutlery, files or saws.

STEEL DIRECT FROM THE ORE.

La Metallurgie gives some account of the *Ponsard* system of producing steel direct from iron ore in a reverberatory furnace. This French journal gives a very glowing report of the result, and a somewhat vague description of the apparatus used for effecting the marvelous transformation. *La Metallurgie* says:

"On the 27th of September, at the forge of the Verrieres, at Vienne, France, the first production of pig iron by the direct treatment of the ore in the gas reverberatory furnace, system Ponsard, took place under the superintendence of the inventor, with the assistance of M. S. Perisse, director of the General Metallurgical Society of Paris.

"The apparatus, which has formerly been described, consists principally of a gazogene, which transforms the fuel into a series of large chambers, and of an apparatus in brick, called the recuperator of heat, which receives the flames from the furnace, and restores the calorie in the form of hot air. The compartments of the chamber serve successively for the reduction of the ore, for the reactions which are effected, and, finally, for the fusion of the whole charge in such a manner that the separation of the component parts is effected by the difference of density. These various phases of the operation require very different temperatures, and the production of these is the special object of the apparatus. On the side of the furnace doors the temperature is only that of red heat, while beyond the heat is so great that the eye is unable to support the intensity of the glow. This extraordinary heat is estimated at 2000° Cent.

"The success of the experiment is reported to have surpassed all expectation, and the result obtained is considered to demonstrate the possibility of producing steel direct from the ore without any of the transformations necessary under existing systems."

Iron very truly says that if the system justifies the report, it is, indeed, a revolution in metallurgical industry. Whatever may be the result of this French experiment, I can avow that

CAST STEEL DIRECT FROM PIG IRON

can now be made at Sheffield. I cannot in this communication enter into any details of the invention, or of the mode employed by the inventor, but I am assured by a shrewd, practical man that it is a perfect theoretical and practical success, and only requires putting before the world to be a great commercial one. He informs me that the thing has been done in a thorough manner; that it is a perfect cast steel produced at once and direct from the simple pig iron, and that a company will shortly be formed for the purpose of working it on a large scale. The cost of the cast steel so produced is said to be about half of that made in the present manner. I don't usually incline to the extravagant fancies of inventors, but I happen to know, in this instance, that the inventor is a thoroughly practical man. He has the management of a large concern here, and should know what he is about.

THE DARLASTON STEEL AND IRON COMPANY.

The report of the Darlaston Steel and Iron Company is scarcely satisfactory to the shareholders. The gross profits on the half year ending June 30, 1874, have amounted to £7152. 18/8. The general charges and interest on mortgages and debentures have amounted to £13,696. 12/11, leaving a debit balance on the half year's working amounting to £6543. 14/3. This deficiency is occasioned, so states the report, mainly by the colliers' strike, during which the production of the forges and mills was greatly diminished by the scarcity of coal, and serious loss was occasioned by the necessity of purchasing fuel at high prices to enable the company to fulfill its engagements and maintain its connections. In addition to these causes, a heavy fall has occurred in the value of iron.

STAFFORDSHIRE AND BIRMINGHAM.

There has been more doing in finished iron since the quarter days, and there seems some prospect of a large business being done very shortly in engineering and constructive iron. There is a good inquiry for rolls, and at the following figures: Chilled rolls of from 12 in. to 22 in. diameter are now £18. 10/ per ton, and the quotations run up from that figure to £24. 10/ for rolls of 6 and 7 inch diameter. Part-chilled and soft chilled rolls are £16 per ton for the larger, and £19 for the smaller sizes just mentioned. Grained rolls of 12 inch and upward are £10. 10/; grooved rolls of the same sizes are £11; pinions, £11. 10/; and housings, chocks, &c., for 12 inch trains and upward, £10. 10/. For guide roll housings £3 more is required. Hammers and anvils are £10; heives (open sand), £11; and bed plates (plain open sand), £9. 10/. Shafts, cast in the ordinary manner may now be bought at £11; and at £12 per ton those may be obtained which have been cast vertically. There are also reductions in the following articles: Axles, axes, blacksmiths' tongs, chains, all kinds of heavy hammers, shoe heels, horse shoes, boiler and other rivets and common vises. Best vises are firm. Lyndon's shovels, spades, etc., of the "best hammered" and "patent" kinds, are easier in consequence of the recent fall in B B H iron. Patent hinges have been dropped by an addition of 2½ per cent. per cwt. in the discount. Heavy washers are further declared down by 1/ per cwt., and light washers are 2½ per cent. more discount. There is a very strong inquiry for knees, locks, hinges, tin plate ware and pens. The American demand for pens has, however, fallen off by fully one-third—partly by reason of your own growing production and partly owing to the heavy impost under which English pens are laid by the duty of 10 cents per gross and 30 per cent. *ad valorem*. The Birmingham people grumble a good deal—and manage to do pretty well. I shall not deal at any length with the iron trade, but merely record that sheets are in active request at £13 to £17, marked bars at £10. 15/ to £11. 5/; common bars, £9. 10/ to £10. 10/; hoops at £11. 15/ to £12. 10, and rods at £10. 10/ to £11. 10.

THE SOUTH WALES DISTRICT.

The whole of the associated iron masters of South Wales have given notice of the termination of all existing contracts with their men, and of a reduction in the iron workers' wages of 10 per cent., to come into effect about Nov. 15. The men are taken by surprise, and have not as yet given any reliable indication of the course they will take. The associated coal masters of South Wales and Monmouthshire have determined to put their new contract rules into operation almost immediately. These rules will almost revolutionize the mode of living (and working) of the Welsh colliers, who have now no rules whatever but their own sweet inclinations. These rules will fix his time for beginning and leaving work; state that he must not be absent from work without permission, with several minor regulations. The district coal trade is good, but the iron works, with about two exceptions, are not enjoying any material amount of prosperity.

THE METAL MARKETS.

There was not much business doing in copper during last week, but tin has closed hands with average freedom, and several good sales of lead are reported as having taken place. Messrs. Von Dadelzen & North say that *Copper* has been dull, with very little doing. The price of Chili bars has declined to £81. 10/ for g. o. b., but late yesterday there appeared a firmer tone, and business reported at £82, cash. In Australian hardly any transactions reported. Wallaroo nominally £92; Burra, £91. English without change. *Tin.*—An average amount of business reported, chiefly in Australian, from £91 down to £90, which was the last price paid. Straits, on the spot, £92 to £92. 10/, and £91 to arrive. English tin firm; blocks and ingots, £97 to £98. The Dutch market is quiet; Banca, 57¼fl.; Billiton 54½fl. Tin plates continue in moderate demand, but there is no change in price. *Lead* has fully maintained the late advance—£22. 15/ to £23 now asked for good soft English pig. *Spelter.*—The market is firm, but no business reported; importers ask £24 for Silesian in warehouse here, *Quicksilver*, £23. 17/6 per bottle.

Messrs. French & Smith's circular says: "The past week metals were very quiet. *Iron.*—Staffordshire is in moderate demand. Rails are not much inquired for. Pig iron, of all sorts, is firm. *Copper.*—Chili bars, after being very strong at £83, have given away a little, and small sales are reported at £81. 10/; this afternoon there is a better feeling, and prices are quoted higher. *Tin.*—We have had some large sales of Australian, spot and just due, at £90. Straits is £92 and £92. 10/, spot; for arrival, £91. 10/. There is no alteration in Dutch prices of Banca or Billiton. The consumption is good. Tin plates are not quite so firm. *Lead* maintains its value, and continues scarce.

Messrs. Vivian, Younger & Bond say: "Prices generally are rather easier for the week, the apprehension of dearer money producing some uncertainty, though no advance in the bank rate took place yesterday as was expected. At the Swansea copper ticketing on Tuesday last, 1747 tons British and foreign ores sold at an average of 15/10 per unit, for an average produce of 14⅝ per cent., Cape ores of 28 per cent. realizing 16/3 per unit. Chili bars have been neglected, and prices are 20/ to 30/ easier, with sales down to £81. 5/ for good ordinary brands, and £83. 10/ to £82. 10/ for picked. In fine foreign very little passing, some sales of Wallaroo at £91. 2/6 to £91. 10/ for cake and ingot. Burra rather scarce at £90 to £90. 10/. English manufactured only in very moderate demand, £95 for sheets. Yellow metal at 8d. to 8¼d. Tough and selected £88 to £89, and £90 to £90. 10/ respectively. The improvement in tin, noticed in our last issue, has been partially lost under the influence of further arrivals of Australian slabs, which have sold at from 90/6 to 90/, both spot, landing, and for arrival in fair quantity. Straits has commaned 93/ for a few parcels on the spot, but is now 20/ lower, and for arrival 91/6. At the ticketing of Australian ores on Tuesday, 66 tons fine sold at £50. 10 to £56. 5/, eight tons good at £38. 10/, and four tons interior at £15. 10/. Seven tons Peruvian barilla at £37. 10/ to £45. Since the advance in English to £98 for common ingot the demand has been rather slack. Tin plates in fair request. Iron dull, and prices rather irregular, *Spelter.*—For English delivered £24. 10/, paid, and £23. 5/ to £23. 10/, spot and to arrive, for Silesian, according to brand. *Lead.*—Ordinary English shipping brands sold at £22. 12/6 to £22. 15/, with a fair business doing."

Messrs. Warner & Walduck's prices current (London, Oct. 22): "*Pig Iron.*—Scotch, from £4. 17/ to £5. 14/, ex steamer in Thames; north of England, £3. 2/6 to £3. 10/ (at works); hematite, £4. 10/ to £5 (at works). General castings, from £6 per ton (at works). *Bar Iron.*—Staffordshire "Champion" bars, £10. 10/; hoops, £11; sheets, £13; strip, £10; charcoal bars, £21; hoops, £22; sheets, £24; strip, £24 per ton (at works). North of England bars, £9. Tank plates, £11 (at works). Bolts and nuts, from £17. 5/ per ton. Spikes and rivets, from £12. 10/ per ton in London. *Tin Plates.*—"Hendy" charcoal, extra fine quality, 38/ per box; "Gower" charcoal, 35/; "Rhos" coke, 30/6 per box; common coke plates, from 27/ per box. Rolled brass, 9¾d. per lb.; brass tubes, 12d. per lb.; copper tubes, 12¾d. per lb.; brass wire, 9½ per lb.; copper wire, 12d. per lb.; telegraph wire, 12½d. per lb."

Messrs. J. H. Austin & Co.'s circular: "*Rails.*—American rails, 50 to 60 lbs. per yard, £7. 10/ to £8, f.o.b., Wales; ditto, Tyne or Tees; Russian and similar, 66 to 75 lbs. per yard, £7. 15/ £8. 5/, f.o.b., Wales; ditto, Tyne or Tees; street rails, £8. 10/ to £9. 10/, Tyne or Tees; steel rails, £10. 10/ to £11, Liverpool; and £10 to £10. 10/, Wales."

LATEST LIVERPOOL PRICES.

Iron; f. o. b. in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Merchant bar	9	7	6 to	9	10	0
Merchant bar, in Wales	9	0	0 to	9	2	6
Staffordshire	10	5	0 to	14	10	0
Hoop	11	10	0 to	12	10	0
Sheet	13	0	0 to	14	0	0
Nail rod	10	5	0 to	10	15	0
Bar, best crown	10	5	0 to	10	10	0
Boiler plates	12	5	0 to	13	5	0

Tin Plates; f. o. b. in Liverpool, per box.

	£	s.	d.	£	s.	d.
Charcoal, I. C.	1	16	0 to	1	19	0
Coke, I. C.	1	7	0 to	1	10	0

Copper: Delivered in Liverpool, per ton.

Bolt and Sheathing	£96
Tile	90
Tough cake	88
Best selected	90

LATEST LONDON METAL MARKET.

Copper.—Business limited, owing to absence of sellers. Chili, £82. 10/ to £82, cash, £83. 10/ three months. Australian unchanged. *Tin*, more business. Straits, £91. 10/ to £92 spot, £90. 10/ to arrive; Australian, £90. 10/ spot and to arrive. *Spelter*, unchanged. *Lead*, £23.

The Iron Interests of the James River Valley.

Although so little importance has heretofore been attached to the iron interests of this valley, the day is near at hand when it will be recognized as far beyond all others. All that is now required to assure this result is cheap coal, which the connections of the canal with the Chesapeake and Ohio Railroad will furnish.

The abundant supply of rich iron ores in the James River Valley is no longer a question. It is a fact, and capable of indisputable proof. These ores are of several varieties, the most abundant of which are the specular or peroxide, including red and brown hematite; limonite, or hydrous peroxide; and black or magnetic oxide. Specimens from a number of large deposits have been carefully analyzed, and yield from 45 to 67 per cent. of pure metallic iron. These specimens were selected with due reference to a working average.

Parties are engaged in mining at several points in this belt, and openings have been made at many other places with the view of ascertaining the extent and character of the deposits. The geological formation is a regular stratification, generally nearly vertical, with a few feet of soil on the surface. The veins are from ten to twenty feet in width, and in many cases very much wider, some of them being forty or fifty feet wide. These ores are easily reduced in the blast furnace, and are remarkably free from sulphur, phosphorus, and other injurious substances. The analysis has shown some of them to be absolutely neutral, which gives them special value for the manufacture of Bessemer steel. The quality of the iron which has been made from these ores is not a matter of speculation. Wherever known it is held in the highest estimation, and commands the very best prices. At a recent test made at Providence, R. I., with the government machine for testing gun metal, the following was the result: The Thomas, Pa., iron stood 18,000 pounds strain to the square inch; Cold Spring, N. Y., 17,000 pounds to the square inch; Poughkeepsie, N. Y., stood 19,000 pounds to the square inch; Powhatan, Va., stood 20,600 pounds to the square inch. Thus demonstrating the Virginia iron to be of superior strength to either of the other famous brands with which it was brought in comparison.

The face of the country for a considerable distance along the river is broken by a succession of bold mountain ridges running parallel with the river. These ridges are at intervals cut across by streams flowing into the river, greatly increasing the facilities for mining, and at many points furnishing good water-power.

Cheap ore is also a disideratum, whether for shipping or working. Experience proves that the different varieties of ores for mixing in the furnace can be collected here by contract for $3 a ton or less; if mined by the manufacturer they should not cost more than one-half that sum. These ores can be mined and put down on tide water at a cost of about $2·50 per ton; delivered in Philadelphia, the cost should not be more than $4 a ton for mining and transportation. While these ores offer a handsome profit to the shipper, it is to the establishment of iron works here that we look for the greatest benefit. With Kanawha coal at from $3 to $4 a ton we can defy all competition from whatever quarter. In confirmation of this statement, we have the authority of General Anderson, [of the Tredegar Works] for saying: "That while a ton of iron would cost from $28 to $30 when made in the Lehigh region of Pennsylvania, a ton of iron could be made in Virginia for $16." This calculation of General Anderson had reference to the use of the Kanawha coal along the line of the Chesapeake and Ohio Railroad. With the completion of the connection between the canal and that road, the James River Valley would possess advantages for iron manufactures not equalled by any other section of the United States.

At this time the manufacture of charcoal iron in this valley might be extensively carried on with great profit. There are thousands of acres of wood land convenient to canal or railroad transportation, which can be bought for $1·50 to $3 an acre, in bodies of 3000 to 6000 acres. If desired, contracts could be made for wood delivered on the canal at such prices as would furnish the best quality of charcoal at from 5 to 6 cents a bushel.—*Virginia Farm Journal.*

The Pequest Iron Works.

We take the following from the Washington (N. J.) *Star* of the 30th ult.:

About five years ago a number of gentlemen of this State organized the Pequest Iron, Mining and Manufacturing Company, for the purpose of mining iron ore and manufacturing iron. To carry out their project, they purchased a farm of 135 acres of Archibald Davidson, paying for the same the sum of $35,000. This farm was located in Oxford township, on the Pequest River and Delaware, Lackawanna & Western Railroad, about two miles from the Oxford Iron Works. They proceeded to explore for ore and

were very successful, the product amounting to several thousand tons, which were shipped to furnaces in Pennsylvania. The ore, though of lean quality, produced a quality of iron very much liked.

The successful operations of the company led them to purchase an adjoining farm of 106 acres of Mr. John Holt, paying for the same $25,000. In prospecting for ore on this property, a large vein was discovered of lean ore, which promises, by analysis, to be very superior for making Bessemer steel. This latter discovery, with the former, led Mr. Richard D. Wilson and his associates at that time to resolve on building a furnace. Mr. Wilson proceeded to Boston and succeeded in enlisting a party of Boston gentlemen to furnish additional capital for the enterprise. The company then formed, about two years since, purchased of Mr. Isaac Dill the farm formerly owned by Sheriff Axford, containing 225 acres, on which the furnace has been erected, for the consideration of $31,500. This farm was considered one of the finest in Warren county.

Shortly after purchasing the Axford farm, the company contracted with Mr. Samuel McHose, of Allentown, Pa., an experienced furnace builder, to build the furnace as we now see it, and, judging it by its appearance, we do not hesitate to pronounce it a well built furnace. It was commenced about a year and a half ago, and blown in Tuesday, the 27th inst. The stack was fired up on Monday noon, and the ignition took place so rapidly that the blast was put on on Tuesday, at 9:30 o'clock p. m., and the first casting made at 9:30 o'clock Wednesday morning. We were present, along with a large number of interested spectators, at 3 o'clock in the afternoon of the same day, when the second cast was made, which was pronounced excellent for the second casting.

We herewith give a brief description of the furnace, its engine and buildings: The stack is of iron, 16 feet bosh and 58 feet high. Steam is generated, for its motive power, from the waste gases brought down from the top of the furnace by the plan generally in use, and is applied under four boilers 60 feet long by 40 inches in diameter, and four boilers 45 feet long and 30 inches in diameter, the latter directly under the four larger boilers. This process produces so far, and bids fair to make all the steam required for driving the blast engine of about 500 horse-power, which is capable of pumping 10,000 cubic feet of air per minute. The engine was built by I. P. Morris & Co., Philadelphia, who are regarded as among the best engine builders in the country, and is a model of power and finish. The steam cylinder is 50 inches in diameter and 7 feet stroke. The blowing cylinder is 90 inches diameter and 7 feet stroke. The engine is of upright build, direct acting, having a fly-wheel 24 feet in diameter, and is at present worked as a low pressure engine. It is however adapted to working as a high or low pressure engine. The blast is heated by 60 pipes of what is known as the "Kent Patent." The engine house is a handsome three story brick building (surmounted with a French roof), in size 35x40 feet. The casting house, built of stone and brick, is 50x25 feet. The stock house is of the same size as the casting house, the lower story being built of stone and the upper story of frame. In this latter building, the raw material, such as iron ore, limestone, coal, etc., for charging the furnace, are prepared. The stock is raised to the top of the stack by a pony engine, located in one corner of the stock house. There are also two railroad tracks laid from the Delaware, Lackawanna & Western Railroad to the stock house, to facilitate the reception of stock and the shipment of iron.

This new furnace is the first erected on the line of the Pequest iron belt, a large vein of ore reported by the State Geologist as extending through this section. The company's mines are about a half mile from the furnace, while limestone and sand are abundant and close at hand. Taking every advantage into consideration, the furnace was put in blast under the most favorable circumstances. Mr. James H. Springer, formerly of the Bethleham (Pa). Iron Company, is superintendent.

Tempering Steel.

Mr. Richards, in his excellent treatise on the principles of shop manipulation for engineering apparatus, says:

Tempering is the romance of the smith's shop; it has an attraction about it that characterizes every process that is mysterious, especially any process connected with, or belonging to mechanical manipulation. A strange and perhaps fortunate habit of mind is to be greatly interested in what is not understood, and to disregard what is capable of plain demonstration.

An old smith who has stood at the forge for a score of years, will take almost the same interest in tempering processes that a novice will. Give an old smith a piece to temper that is liable to spring or break when the risk is great, and he will enter upon it with the same zeal and interest that he would have done when learning his trade.

No one has been able to explain why a sudden change of temperature hardens steel, nor why it assumes various shades of color at different degrees of hardness; even the most critical researches into the chemistry of steel have offered no rational explanation. We only know the fact, and that, fortunately, steel has such properties. Every one that uses tools should understand tempering them, whether it be for iron or wood work. Experiments with tempered tools is the only means of determining the proper degree of hardness, and as smiths, except with their own tools, have to rely upon the explanations of others as to proper hardening, it follows that tempering is generally a source of complaint with those who use tools hardened by others.

Tempering, which, as a term, is used to comprehend both hardening and drawing, is almost solely a matter of judgment instead of skill, and has no such intimate connection with forging as to be performed by smiths alone. In fact it requires a different kind of fire from those used in forging, and also requires as a process more care and precision than blacksmiths usually exercise in their operations, unless they have furnaces and baths especially arranged for tempering tools.

A difficulty that arises in hardening is from the contraction of the steel which takes place in proportion to the change of temperature; and as the time of cooling is in proportion to the section of a piece, it follows of course that there is a great strain and a tendency to break the thinner parts before the larger parts have time to cool and contract, or this strain may take place from the cooling of one side first, or more rapidly than another.

The following proposition in regard to tempering, comprehend the main principles to be observed:

The permanent contraction of the steel is as the degree of hardness that is imparted to it by the bath.

The time in which the contraction takes place is as the cross section of the piece at any part; or in other words the heat passes off first from the surface, and then uniformly from the surface to the center.

The thin sections of steel tools being removed from or projecting from the mass which supports the edges are cooled first, and if provision is not made to allow for contraction, the thin sections or edges are torn asunder.

The main point in hardening and the most that can be done to avoid irregular contraction, is to apply the bath so that it will act first and strongest on the thickest part. If a piece is tapering or in the form of a wedge, the thick end should enter the bath first; a cold chisel, for instance, that is wide enough to endanger cracking, should be put into the bath with the head downward.

The upflow of currents of warmed water are a common cause of irregular cooling and the springing of steel tools in hardening; the water that is heated rises vertically, and the least inclination of a piece from a perpendicular position allows this warm current to flow up on one side and to leave the piece on the other.

The most effectual means of securing uniform effect from the bath is by violent agitation, either of the bath or the piece; this also adds to the rapidity of the cooling.

The effect of tempering baths is as their conducting power; chemical effect need not be considered, except as it may contribute to this. For baths, cold water or ice water loaded with salt and warm oil are the two extremes outside of which nothing is required.

In tools composed partly of iron and partly of steel, steel laid as it is called, the tendency to crack in hardening may be avoided in a great degree by hammer stretching, hammering the steel edge at a low temperature until it is expanded so that when cooled in hardening it will only contract to a state of rest with regard to the iron parts; the same effect can be produced by curving a piece, giving convexity to the steel side before hardening.

Tools should never be tempered by immersing their edges or cutting parts in the bath, and then allowing the heat to "run down" to do the tempering. I am well aware that this is attacking a general custom, but it is none the less wrong for that reason.

Tools so hardened have a gradually diminishing temper from their point or edge, so that no part is properly tempered, and they require continual rehardening, which spoils the steel; beside the extreme edge is usually spoiled and must be ground away to begin with. No lathe-man who has once had a set of tools tempered throughout by slow drawing, either in an oven or on a hot plate, will ever consent to point hardening afterward. A plate of iron, two to two and one-half inches thick, placed over the top of a tool dressing fire, makes a convenient place for drawing temper, beside adding greatly to the convenience of slow heating, which is almost as important as slow drawing. The writer has in one case by actual experiment determined that the amount of tool dressing and tempering, to say nothing of time wasted, was in ordinary machine fitting reduced more than one-third by "oven tempering" the tools for lathes and planing machines.

As to the shades that appear in drawing temper, or tempering it is sometimes called, it is quite useless to repeat any of the old rules about "steam color, violet, orange, blue," and so on—the learner knows as much after such instruction as before. The shades of temper must be seen to be learned, and as no one is likely to have use for the knowledge before having opportunities to see tempering done, I will recommend the following plan which will be found an efficient one to begin with, in learning the shades of temper: Procure 8 pieces of cast steel about two inches long by one inch wide and three-eights of an inch thick, heat them to a high red heat and drop them into a salt bath, leave one without tempering to show the white shade of extreme hardness, and grind off and polish one side of each of the remaining seven pieces; then give them to an experienced tool maker to be drawn to seven various shades of temper ranging from the white piece to the dark blue color of the soft steel. On the backs of these pieces paste labels describing the technical name of the shades and the general uses to which tools of corresponding hardness are adapted.

This will form an interesting collection of specimens, and accustom the eye to the various tints, which will, after some experience, be instantly recognized when seen separately.

It may be remarked, as a general rule, the hardness of cutting tools is "inversely as the hardness of the material to be cut," which seems anomalous, and no doubt is so if nothing but the edge is to be considered; but all edges are subjected to transverse strain, and this transverse strain is constantly as the hardness of the material acted upon; hence the degree of temper has of necessity to be such as to guard against breaking. Tools for cutting wood, for example, can be much harder than for cutting iron, or to state it better, tools for cutting wood are harder than those usually employed for cutting iron, for if iron tools were always as carefully formed and as carefully used as wood tools are, they could and should be equally hard.

Coal Miners' Strike at Belleville, Illinois.

ST. LOUIS, November 11.—The strike of the coal miners of St. Clair county, Illinois, opposite this city, continues. A meeting was held yesterday at French Village, at which it was resolved that work in all the mines in Belleville district be suspended until every company in it accede and all non-union men join the miners' union and are governed by the same laws.

The strike is for a uniform price of four cents a bushel for digging, eight hours' labor, and just weight. The union miners also insist that all non-union men, or "Blacklegs," as they are called, shall join the union.

There is a good deal of uneasiness in Belleville, and considerable apprehension felt that trouble, if not bloodshed, will follow. To avoid this, if possible, a militia company has been formed, and arms have been received from the State. The miners assert they do not intend to resort to violence, but are determined to hold out till their demands are acceded to.

The Isabella Furnace.—The following is a record of the run of stack No. 1, Isabella Furnace, at Etna, Pa., for four weeks. The stack is 75 feet high by 18 feet bosh:

Week ending.	Tons.	Lbs.
Oct. 17	616	50
Oct. 24	651	930
Oct. 31	674	1490
Nov. 7	702	1230
	2644	1450
Average	661	362

The attention of capitalists is invited to the advertisement of "Blast Furnace for Sale," which will be found among Special Notices on the 16th page.

London Metal Market.

(From The Mining Journal.)

	£.	s.	d.	£.	s.	d.
Copper—₱ ton.						
Best Selected	92	0	0		—	
Tough Cake & Tile	90	0	0		—	
Sheathing and Sheets	94	0	0	96	0	0
Bolts	97	0	0		—	
Bottoms	97	0	0		—	
Old	85	0	0		—	
Australian	90	0	0	92	0	0
Wire ₱ lb.	0	1	0		—	
Tuyes "	0	1	1	0	1	2
Brass—₱ lb.						
Sheets	0	0	9	0	0	9¾
Wire	0	0	9	0	0	9¾
Tubes	0	0	11	0	0	12
Yellow Metal Sheathing	0	0	8	0	0	8¾
Sheets	0	0	8		—	
Spelter—₱ ton.						
Foreign on the spot	23	5	0	23	10	0
" to arrive	23	2	6		—	
Zinc—₱ ton.						
In Sheets	21	0	0	21	0	0
Quicksilver—₱ bottle.	24	0	0		—	
Tin—₱ ton.						
English Blocks	97	0	0	98	0	0
Ditto Bars (in bris.)	98	0	0	99	0	0
Ditto Refined	98	0	0		—	
Banca	97	0	0	98	0	0
Straits	91	0	0	92	10	0
Australian	90	0	0	91		
Tin Plates—† ₱ box.						
IC Charcoal 1 qual.	1	16	0		—	
IX " 1 qual.	2	0	0		—	
IC " 2 qual.	1	15	0		—	
IX " 2 qual.	2	1	0		—	
IC Coke	1	7	0	1	9	0
IX "	1	15	0	1	15	0
Canada Plates ₱ ton.	19	0	0		—	
" at works	18	10	0		—	
Iron—₱ ton.						
Bars Welsh, in London	9	5	0			0
" to arrive	9	0	0			
Nail Rods	10	5	0	11		0
Nail Rods, Staff'd in L'ndon	11	0	0	12	—	
Bars	12	0	0		0	0
Hoops	10	0	0	11	0	0
Bars at Works	11	0	0	12	0	0
Hoops ditto	11	0	0	12	0	0
Sheets, single, and plates	12	15	0	14	0	0
Pig, No. 1, in Wales	5	0	0	6	10	0
Refined metal ditto	7	0	0	8	0	0
Bars, common ditto	5	5	0	6	10	0
Do, merchant, Tyne or Tees	8	10	0		—	
Ditto, Railway, in Wales	7	0	0	7	5	0
Ditto, Swedish, in London	16	0	0	17	0	0
To arrive	17	5	0			0
Pig, No. 1, in Clyde	4	7	0	5	12	6
Ditto, f.o.b., Tyne or Tees	4		0	4	5	0
Ditto, Nos. 3, 4, f.o.b.	3	10	0	4		0
Railway Chairs	5	0	0	5	5	0
" Spikes	12	10	0	14	0	0
Indian Ch'coal Pigs in L'don	8	0	0	10	0	0
Steel—₱ ton.						
Swedish, in kegs (rolled)		—			—	
Ditto (hammered)	19		0	20	0	
Ditto, in faggots	20	10	0		—	
English, spring	19	0	0	24	0	0
Lead—₱ ton						
English Pig, common	22	15	0	23	—	
Ditto, L.B.	23	0	0			
Ditto, W.B.	24		0			
Ditto, Sheet	24		0	24	10	0
Ditto, Red Lead	24	0	0	24	5	0
Ditto, White	30	0	0	32	0	0
Ditto, Patent Shot	26	10	0	26	15	0
Spanish	22	12	6	22	17	6

* At the works, 1s. to 1s. 6d. per ton less. Terne plates 2s. per box below tin plates of similar brands.
† Add 6s. for each X.

LITTLE JOKER.

The Best
Cheap Pistol Made.

Send at once for a new
ILLUSTRATED CATALOGUE,
The most complete ever published, containing Cuts and Prices of
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Lists will be sent *only* to *DEALERS* in Gun and Pistol Goods.

MILLERS FALLS COMPANY, No. 78 Beekman Street, New York,

BARBER RATCHET BRACE.

This Brace has a **Lignumvitæ Head, Rosedale, Wrought Iron Nut & Socket,** with **Lignumvitæ Revolving Handle, Malleable Iron Sweep, Malleable Iron**

Cast Steel Jaws,

It is beautifully finished, and in

MOST PERFECT BRACE

In places where there is not room to revolve the sweep, a will drive the bit in or out. They cost only 50 cents more without the Ratchet attachment, and will surely come

Pawl and Rachet Wheel,

all respects the

IN MARKET.

slight back and forth motion than the same style of brace into general use.

For Sale by all Hardware Dealers.

Miller's Falls Co.,
No. 78 Beekman St.,
NEW YORK.

WITH THIS

BRACKET SAW

An infinite number of useful and ornamental articles can be made. It will pay for itself every day when in use. The frame is 5x12 in., and made of red cherry wood, beautifully polished.

For sale at all Hardware stores.

Millers Falls Co.,
B . Y.

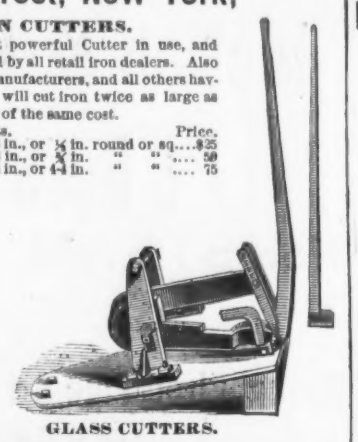
In addition to the 20 Cast Steel Tools inclosed in this handle, it will hold anything from an 8 inch Mill File to a Cambric Needle. It is by far the best Tool Holder in use, and will also answer nearly all the purposes of a Hand Vise. The wood is lignumvitæ and hard maple, the ferrule, malleable iron, and the jaws cast steel. Most hardware dealers keep them, or will send to us for them.

MILLERS FALLS CO, 73 Beekman St., N. Y.

IRON CUTTERS.

This is the most powerful Cutter in use, and just what is needed by all retail iron dealers. Also by shipbuilders, manufacturers, and all others having iron to cut. It will cut iron twice as large as any other machine of the same cost.

	Weight.	Cuts.	Price.
No. 1,	16 lbs.,	⅜x2 in., or ½ in. round or sq.	$25
No. 2,	165 lbs.,	⅝x3 in., or ⅝ in. " "	50
No. 3,	314 lbs.,	6-8x4 in., or 4-4 in. " "	75



GLASS CUTTERS.

Our Glass Cutters are made with a handle like a Glaziers Diamond, but, instead of the diamond point, they have a small hardened steel revolving wheel, the sharp edge of which cuts nearly as well as a diamond. They are durable, and will give entire satisfaction.

Manufacture **Barber's Bit Braces, Miller's Falls Vises, Little Giant Iron Cutters, Adjustable Chuck Breast Drills, Family Tool Chests, Pratt's Boiler Tube Scrapers, Patent Angular and Ratchet Drilling Machines, Langdon Mitre Boxes.**

HOWARD PARALLEL BENCH VISE.

MANUFACTURED BY

Howard Iron Works,

Send for price list. **Buffalo, N. Y.**

RUSSELL & ERWIN MFG. CO., New York and Philadelphia, Agents.

NOTICE.

These **Vises** are only manufactured at the **HOWARD IRON WORKS,** at **Buffalo, N. Y.** and are so stamped. The improvements in these **Vises** which are patented are valuable, and parties who claim to manufacture, and are offering a **Vise** representing it to be the same as the **HOWARD VISE,** are deceiving the Trade.

HOWARD IRON WORKS.

The Fisher & Norris Eagle Anvil Works.

(ESTABLISHED 1843.)

These Anvils are manufactured at the oldest Anvil Factory in this country. They are *superior* to the best English, or other Anvils, on account of the peculiar process of their manufacture (invented and used only by this concern), and from the quality of the materials employed.

The best English Anvils, after a time, become hollowing on the face by continued hammering in use, on account of the fibrous nature of the wrought iron—causing it to "settle" under the face.

The body of the Eagle Anvils being of crystallized iron, no such settling can ever occur; and the steel face, therefore, remains perfectly true. Also, it has the great advantage, that being of a more *solid* material, and consequently with less rebound, the piece being forged receives the full effect of the hammer, instead of a part of it being wasted by the rebound, as with a wrought iron anvil. An equal amount of work can, therefore, be done on this Anvil with a *hammer one-fifth lighter* than that required when using a wrought iron anvil which is more elastic.

The working surface is in *one piece* of JESSUP'S BEST TOOL CAST STEEL, which, after being accurately ground, is hardened and given the proper temper for the heaviest work. The *horn* is covered with and its extremity made *entirely of steel.* The body of the Anvil is of the strongest grade of American iron, to which the cast steel face is *warranted to be thoroughly welded and not to come off.*

REDUCED PRICE LIST. ANVILS weighing 100 lbs. to 800 lbs., 11c. per lb.

Smaller Anvils, ("Minims.")

No.	0	1	2	3	4	5	6	7	8	9
Weighing about	10 lb.	15 lb.	20 lb.	30 lb.	40 lb.	50 lb.	60 lb.	70 lb.	80 lb.	90 lb.
Price,	$3·50	$4·25	$5·00	$5·50	$6·50	$7·50	$8·00	$9·00	$10·00	$10·50

THESE GOODS ARE SOLD BY THE GENERAL AGENTS (with special discounts to the trade).

New York.—Messrs. CLARK, WILSON & CO.—RUSSELL & ERWIN MANUFACTURING COMPANY.—Messrs. HORACE DURRIE & CO. Boston.—Messrs. GEORGE H. GRAY & DANFORTH. Philadelphia.—Messrs. JAMES C. HAND & CO. Baltimore.—Mr. W. H. COLE.

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Mechanical No Chimney Kerosene LAMP.

Equal to Gas. No Smoke, No Smell, Guaranteed cannot Explode. Send for Circular. Liberal discount to Trade.

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ADDRESS MORTON GOVERNOR CO. LAWRENCE MASS.

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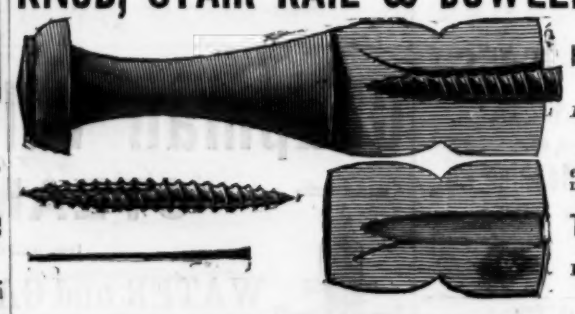
KNOB, STAIR RAIL & DOWELING SCREWS.



Self-Attaching

HAT & CLOSET PINS,

Picture Knobs,

DOOR STOPS, DRAWER KNOBS, &c., &c.

Screw has gimlet points at both ends, and is slotted at one end to admit of a key, which holds it fast.

Manufactured by

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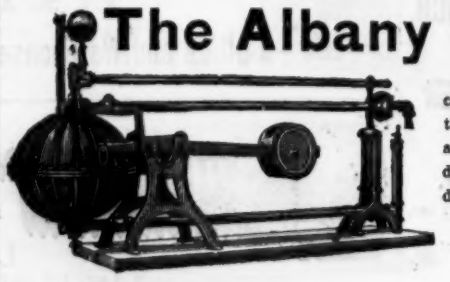
Fernald & Sise, N. Y. Agents,
100 Chambers St.

The Albany Steam Trap.



This Trap automatically drains the water of condensation from *Heating Coils,* and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

TOWNSEND & BLESSING,
Albany, N. Y.

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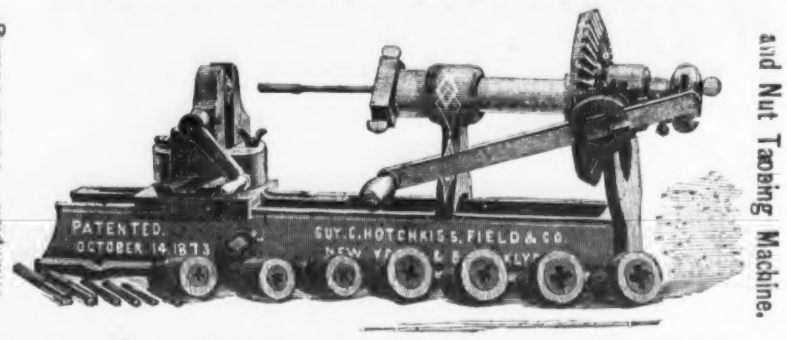
85 First St., Brooklyn, E. D., and New York City.

"Champion" Thread Cutting and Nut Tapping Machine.



This machine has revolving and sliding jams, which enables the operator to cut all kinds work, no matter how irregular in shape it may be. It cuts a perfect thread at once going over. As much work can be done in one hour by this machine as in a day with stocks and dies. Send for Circular.

Manufacture Carriage Materials, Axles, Springs, Blacksmiths' Supplies, Bolts, Wood Work, Trimmings, &c.

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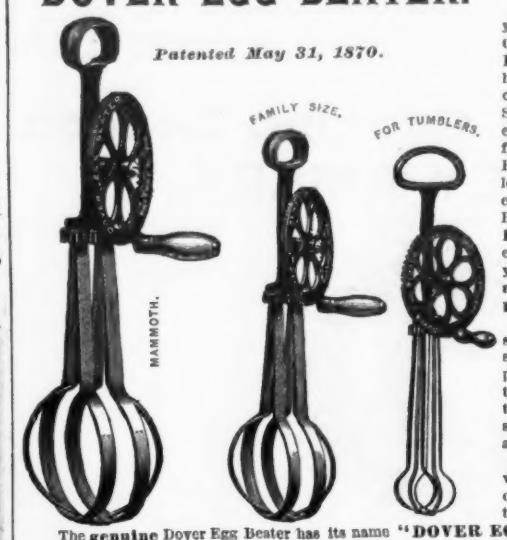
SOLE OWNERS AND MANUFACTURERS.

DOVER EGG BEATER.

Patented May 31, 1870.



The **genuine** Dover Egg Beater has its name **"DOVER EGG BEATER"** legibly cast on the face of the large wheel.

Special Notice to the trade.

The long contested suit (more than two years' in court) Monroe vs. Dover Stamping Co., which was brought to **destroy** the **DOVER EGG BEATER PATENT,** has been **decided in our favor** (see decision of the Circuit Court of the United States, Sept. 3, 1874, Shepley, judge), thus ending disastrously to our opponents, and fully vindicating the integrity of the Dover Egg Beater Patent, which we shall maintain legally against all who infringe the same or either of our seven other patents on Egg Beaters. **Imitations** of our **Dover Egg Beaters** or either of the Egg Beaters covered by our Patents, **manufactured beyond the limits of the United States, and brought here for sale, will be promptly and severely dealt with.**

All persons are cautioned against **buying, selling** or **using** such infringements, as we shall prosecute all concerned in the illegal practice. We have already commenced suits to suppress the **manufacture** and **sale** of the so-called **PEERLESS BEATER,** and shall require all who infringe our rights to answer legally for their acts.

Remember that **buying** and **selling** as well as **manufacturing** any infringements of our Patents exposes one to **three times** the damages awarded by a jury.

DOVER STAMPING CO.

FOR MELTING ALL KINDS OF METALS,

And Manufacturers of

Sunny Side Stove Polish.

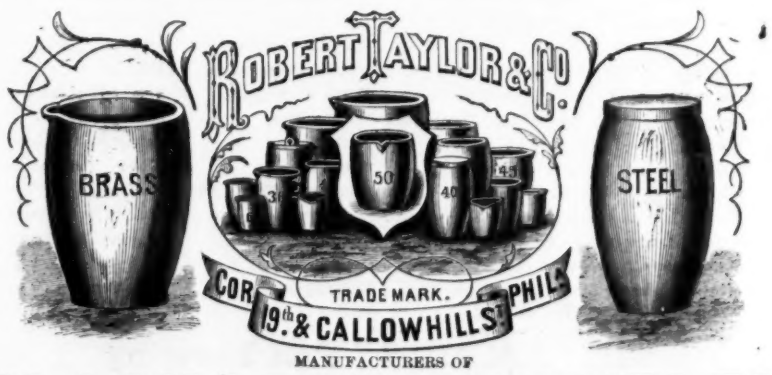
Lumber Pencils, Foundry Facings and Lubricating Plumbago.

STROW, WILE & CO.,

Nos. 1324, 1326, 1328, 1330, 1332 & 1334 Callowhill St., Phila.

GENERAL AGENTS:

Messrs. HALL & CARPENTER, 709 Market St., Phila.



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Of all Sizes and Forms for melting

Steel, Brass, Gold, Nickel and all kinds of Metals.

Mr. Robert Taylor, who was for seven years the head of the late firm of Taylor, Strow & Co., and who is a practical mechanic, and familiar with all the details of the manufacture of Crucibles, attends personally to our manufacturing department. We would, therefore, respectfully solicit a continuance of the favors hitherto extended to him.

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No. 1900, 1902, 1904 & 1906 Callowhill, St., Philadelphia.

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{PARK & CO., 122 Second Avenue, Pittsburgh, Pa.

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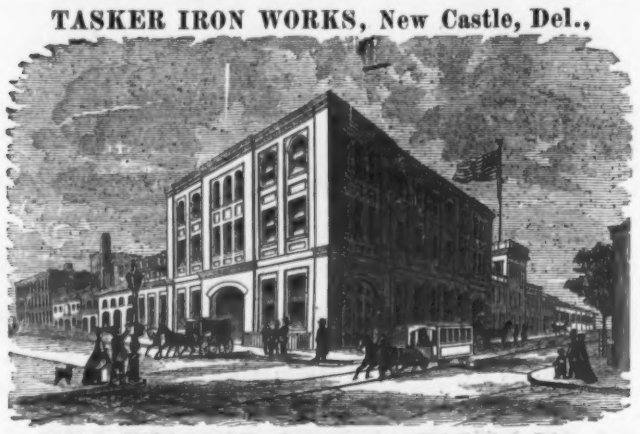
PASCAL IRON WORKS, Philadelphia,

TASKER IRON WORKS, New Castle, Del.,



Office, Fifth and Tasker Streets, Philadelphia.

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WROUGHT IRON WELDED TUBES,

Plain, Galvanized and *Rubber-Coated*, for Gas, Steam and Water.

Lap-Welded Charcoal Iron Boiler Tubes.

Oil Well Tubing and Casing, Gas and Steam Fittings, Brass and Steam Fitters' Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved Coal-Gas Apparatus, Etc.

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BAILEY'S PATENT ADJUSTABLE PLANES.

Thirty different styles in

IRON AND WOOD. 80,000 ALREADY IN USE.

Smooth Planes,
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Jointer Planes,
Block Planes,
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Carpenters,
Cabinet Makers,
Car Builders,
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Wheelwrights,
All Use them.

Manufactured by the **STANLEY RULE & LEVEL CO.,**

Factories: **New Britain, Conn.** Warerooms: **35 Chambers Street, New York.**

UNION NUT COMPANY,

78 Beekman Street, N. Y.

MANUFACTURERS and AGENTS.

Machine Forged Nuts,	Magnetic Tack Hammers,	Carriage Steps,	Bench Saw Sets,
Hot Pressed Nuts,	Common and Patent	Slat Irons,	Corn Hooks,
Wrought Iron Washers,	Wood Choker Mouse	Stump Joints,	Axe Handle Bush Hooks,
Tin Washers,	Traps,	Body Loops,	Butchers' Cleavers,
Carriage Bolts	Elastic Base Knobs,	Box Hooks,	Nail Sets,
Machine Bolts	Steak Hammers,	Box Chisels,	Cork Screws,
Plow Bolts.	Boxwood Rules,	Tobacco Needles,	Ice Awls,
Stove Bolts,	Ivory Rules,	Table Nut Cracks,	Ice Axes,
Elevator Bolts	Plumbs and Levels,	Hasps and Staples,	Tinned Meat Hooks,
Tire Bolts,	Adjustable Plumbs and	Ox Bow Pins,	Can Openers,
Fancy Bolts,	Levels,	Bull Rings,	Patent Boot Jacks,
Bolt Ends,	Pocket Levels,	Cattle Leaders,	Wood Handle Cover
Coach Screws,	Wagon Jacks,	Boxwood Wheel Sash	Lifters,
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Blacksmiths' Hammers,	Saddle Clips,	Coopers' Rivets,	Lignumvitæ Mallets,
Riveting Hammers,	Fifth Wheels,	Carriage Rivets,	Tin Spoons,
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The "EMPIRE" Fan Blowing

Portable Forges,

With or without Hood.

(Patented Nov. 25, 1873.)

WITHOUT BELTS OR BELLOWS.

It is more **Easily Worked**, gives a **Better Blast**, and is the **Cheapest Forge** made.

☞ **IT HAS NO BACK DRAUGHT.**

Manufactured by W. P. KELLOGG & CO., Troy, N. Y.

Also **Curry Combs, Boring Machines, & Cooley's Whip Racks, etc.**

N. Y. Depot for **Curry Combs, &c.**, with **F. WIEBUSCH, 84 Chambers Street.**

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Pipe, Fittings, &c.

National Tube Works Co.,

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MANUFACTURERS OF

Best Quality Lap Welded Iron Boiler Tubes,

STEAM AND GAS PIPE,

Artesian Oil and Salt Well Tubing and Casing,

With Patent Protecting Coupling;

Mack's Patent Injector for Feeding Boilers.

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For STEAM, WATER and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized

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FITTINGS, BRASS & IRON VALVES & COCKS

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PIPE CUT & FITTED TO PLANS FOR MILLS &c.

CONTRACTORS

FOR HIGH & LOW PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

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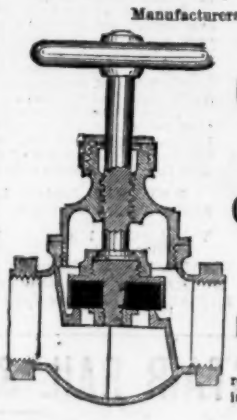

Jenkins' Patent

Compression Valves

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Gauge Cocks

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LUBRICATOR.

Warranted the most reliable and durable in the country.

CAST IRON PIPES

FOR WATER AND GAS.

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WHEATCROFT'S

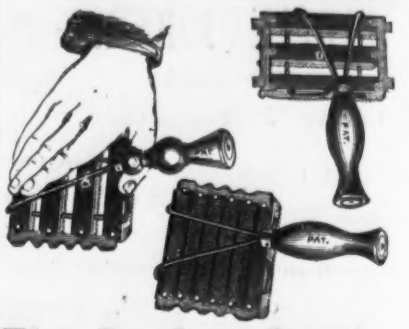
SELF-ADJUSTING PIPE WRENCH.

Forged from Best Tool Steel.

The dog is solid over the head of the lever bar, taking the strain off from the pin.

Each Wrench takes four Sizes of Pipe.

J. AUSTIN & CO. 168 Fulton St., N. Y.



The Perfect Comb.

We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, made with a view to meeting all the requirements of a *Perfect Comb*. It is better, stronger, and more durable than any ever before invented. The raised wire shank gives what has never before been attained, viz: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse while using the comb. The wire braces which run from the shank over the back to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers in connection with the raised shank the comb is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name: **The Perfect Comb.**

THE LAWRENCE COMB CO.

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WILLIAMS WHITE & CHURCHILL,

Successors to

MACKRELL & RICHARDSON MFG. COMPANY

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Builders' Hardware,

Locks, Hinges, Hooks and Staples,

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Pumps, Water Closets, Fountains, Vases, &c.

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R. D. WOOD & CO.,

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Manufacturers of

Cast Iron Water and Gas Pipe, Lamp Posts, Retorts, &c.

Also, Race & Mathews' **Patent Hydrant.** This Hydrant is perfectly anti-freezing, is the most ornamental and the cheapest made

R. PAINE, Selling Agent, Office, 173 Broadway, N. Y.

REVOLVING SCRAPER COMPANY,

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Manufacturers of **Doty's Revolving Road Scrapers, Mammoth Road Plows, and R. R. and Canal Barrows, with Pat. Wheels.**

Send for Circular and Price List.

Schweitzer Mfg. Co.,

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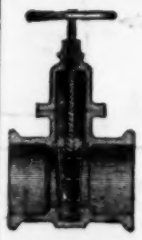
Chapman Valve Mfg. Co.,

STEAM VALVES,

Iron and Composition, of all sizes.



WATER and GAS Gates, 3 to 48 inches.

HYDRANTS.

Office and Warehouse, 75 & 77 Kilby St., Boston, Mass.

TURNED MACHINE SCREWS,

One-sixteenth to five-eighths diameter. Heads and points to sample.

IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

Cor. 1st and North 3d Streets, Williamsburgh, N. Y.

The Iron Age Directory

and index to Advertisements.

Specification of Workmanship, Materials and Construction, as Applied to Sheet Metal Architectural Work.

Galvanized Iron.—Use the best quality of iron, with coating perfect and evenly laid, free from buckles and crinkles. Before working, trim all uneven and thick edges, and thoroughly roll to remove any inequalities of surface. Adapt the gauge of iron to the character of the work in hand. Number 27 may be used in the lesser moldings, where small numbers occur; No. 26 is to be used for all ordinary work. Large, unbroken surfaces are to be constructed of No. 24, while Nos. 22, 20, and heavier, are required only where the work is subjected to unusual strain and exposure.

Moldings.—No. 26 shall be considered the gauge for the generality of moldings, with exceptions only as noted under the head of galvanized sheet iron. Trim and thoroughly roll before working. Care must be used in laying off the members, that strict uniformity and precision are obtained. All bends and angles must be made sharp and well defined, and all curves formed strictly to profile. Miters must be neatly made with riveted joints in all fillets and flat parts, and thoroughly soldered with a strap inlaid in the curves. In very large moldings of heavy iron, the joint must be made riveted throughout. In all curved molding, care must be used to obtain strict conformity to stay or profile, and in this respect, except when of very superior workmanship, rolled moldings are objectionable. See that the curve is perfect throughout, and that all angles are sharp and well defined.

Brackets, Modillions and Dentils.—Construct with lap joints thoroughly riveted and carefully soldered. Care must be taken to obtain clean and well defined angles and perfect shape. Provide flanges for seaming or riveting to moldings of cornice, and attach suitable tie straps, where necessary for fastening when putting up. Incised, scroll, and other similar ornamental work, must be carefully cut, thoroughly soldered, and left clean and true in all respects. Leaves, rosettes and other pressed ornaments are to be thoroughly soldered, and in construction so disposed as to fit snugly to the faces to which they attach. Provide brackets with proper connections with frieze pieces. Dentils and modillions are to be thoroughly seamed or riveted to the dentil course and modillion course respectively.

Frieze Pieces.—Construct with weather joint against foot mold below and be oldings bove, arranged for riveting. All panel moldings must be well defined in profile, and joined by riveted and soldered joints. Provide lock or riveted joints against brackets at ends. All ornamental figures, scrolls, etc., must be thoroughly soldered in place and left clean on completion.

Window and Door Caps, &c.—Construct of numbers 26 and 24 galvanized sheet iron, according to the nature of the design and the size of the structure. All joints and miters are to be thoroughly riveted and carefully soldered. Allow frame strips to extend onto frame not less than two inches. Extend wall strips not less than three inches into wall, and construct same with stiffening edges. Let all keystones and similar ornamental work extend back into wall for a finish. Corbels must be provided with straps and ties for fastening in course of walling in. In caps of heavy projection, provide necessary wrought iron strips and stays for stiffening and holding in shape. For window and door caps used in remodeling all buildings and to be fastened up from the outside, provide frame strip to slip in between frame and brick work, and turn wall flange up for nailing and to receive counter flashing.

Dormer Windows.—Use numbers 26 and 24 galvanized sheet iron. All miters and joints to be thoroughly riveted and neatly soldered. Brackets, dentils, scrolls, &c., are to be thoroughly secured by riveting or seaming. In construction, perfect fit to the pitch of the roof must be obtained and all return moldings provided with proper flashing flanges and made thoroughly water-tight. For the roofs of Dormers, tin is preferred to iron. Lay with flat and soldered joint, thoroughly cleated, and provide flashing flange to run up under slate not less than eight inches. In constructiug the sides of Dormers out of galvanized sheet iron, provide throughout a flashing flange so made as to form a gutter, thus avoiding the use of piece flashing and securing an even and neat finish of slate against the iron work.

Gutters.—Tin is preferred to galvanized sheet iron for gutters in most cases. For gutters constructed in cornices, with wood lookouts, use IC or IX, 20x28, bright charcoal tin, of standard quality, M. F. or Pontymister preferred. Join to the crown molding of cornice at the front, by nailing and soldering or double seaming, and at the back extend up under slate or metal work of the structure not less than eight inches. The gutter is to be soldered on both sides, and made perfect in all respects. For hanging gutters of large size, use No. 26 or 24 galvanized sheet iron. Thoroughly rivet and solder on both sides at all joints. In putting up, break sections each thirty feet and provide each section with suitable outlet. Fasten with wrought iron hangers, and extend roof-flange up under slate or shingles, as the case may be, not less than eight inches. For gutters in connection with strictly fire proof cornices, put up on wrought iron supports, the pitch must be made in the lookouts, the same, in general terms, as in case of wood lookouts. Provide lining of No. 22 to 24 black sheet iron from 12 to 24 inches wide, according to size of gutter, thoroughly painted on both sides, before laying, with red oxide of iron and oil. Fasten lining to braces by notching and bending flanges down and around the supports, thus allowing free play for contraction and expansion. Provide outer edge of gutter with an inverted T iron thoroughly bolted to wrought iron supports of cornice, over which join outer edge of gutter to upper member of cornice by a double seamed joint. For gutter use IX, 20x28, bright charcoal tin of standard quality, carefully put together and thoroughly soldered on both sides. Allow back of gutter to extend up under slate or other roof, as the case may be, not less than eight inches, and fasten in such manner as to provide for contraction and expansion.—*Sheet Metal Builder.*

HENRY DISSTON & SONS,

Keystone Saw, Tool, Steel and File Works,

Front and Laurel Streets, Philadelphia.

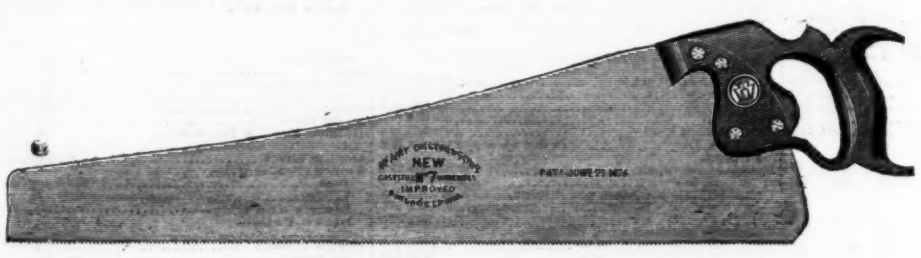
MANUFACTURERS OF

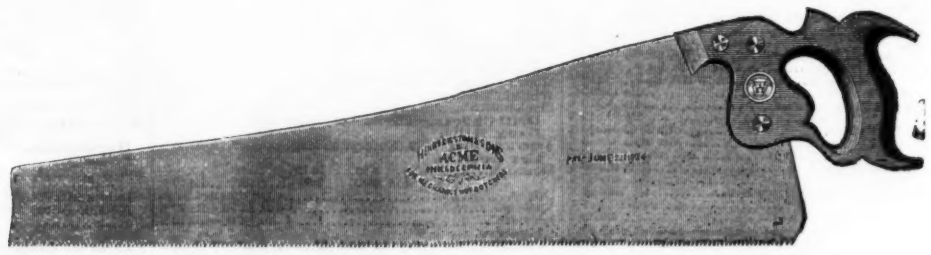
SAWS OF EVERY DESCRIPTION, FILES, &c.

Also Sheet Steel and Articles made from Sheet Steel.

Branch Works, Tacony, Philadelphia. **Branch House, Randolph & Market Streets, Chicago, Ill.**

HENRY DISSTON & SONS desire to call the attention of the Hardware Trade, also the Mechanics of this Country, to their





"NEW PATENT SKEW BACK HAND SAW,"

which has been pronounced by all first-class workmen who have used it, to be eminently superior in every respect to the old style hand saw. Its advantages are manifold, the peculiar formation of the blade actually stiffening and strengthening it in a remarkable degree, and the recess in the handle allowing the introduction of the thumb of the left hand and giving the operator full power to manipulate the saw, and the principle of bedding the handle in the blade bringing the operator closer to his work, an advantage will be readily appreciated by any mechanic. It is a singular fact that while vast improvements are constantly being made in all other kinds of saws, the hand saw of to-day in shape and style is similar to the hand saw of centuries ago. Recent experience has proved that it is as susceptible of improvement as any other saw. Our aim and object has ever been to assist the mechanic and lighten his toil, and one trial of our **NEW PATENT SKEW BACK HAND SAW** will prove how well we have succeeded.

New York Wholesale Prices, November 11, 1874.

HARDWARE.

Anvils.
Solid Cast Steel ℘ ℔ 14c
Wright's ℘ ℔ gold 11½c; over 250 ℔s 12c, gold
Armitage's Mouse Hole gold 11c
Wilkinson's ℘ ℔ gold 11½c
Eagle Anvils, ℘ ℔ 11c currency dis 15&10 %

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union, Skeleton Paring, Coring and Slicing } $7 @ 9 ℘ doz
Turn Table, old style $6.75 dis 10 %
Bay State, Paring, Coring and Slicing $15 00 dis 10 %
Climax Slicer 8 00

Augers and Bits.
Douglass, Ives, Beecher (French, Swift & Co), Griswold, Noble } 1st quality dis 25, 10&10 %; 2d quality dis 25, 10, 10&5 %
Challenge dis 40&10 %
Snell Mfg. Co dis 15 @ 20 %
Russell Jennings dis 10 %
Lewis' Single Twist Bits dis 30 %
Andrews' Bits dis 25 %
Cook's Bits dis 40&10 %
" Augers dis 50 %
Expansive Bits, Clark's $18 @ $26—dis 15 %
" " Ives' $20 @ $30—dis 20&10 %
" " Blake's $30—dis 25&10&10 %
Hollow Augers, Douglass' dis 25&10 %
" " Ives' dis 25&10 %
" " French, Swift & Co dis 25&10 %
" " Bonney's Adjustable ℘ doz $48—dis 25 %
" " Stearns' " ℘ doz $48—dis 25 %
" " Ives' Expansive each $4.50—dis 40 %
" " Cushman's Expansive dis 20 %
Shepardson's Double Cut Bits dis 20 %
Griswold's Patent dis 20 %
Gimlet Bits dis 30 %
Morse's Bit Stock Drills dis 20 %
L'Hommedieu's Ship Augers dis 15 %
Watrous Ship Augers dis 15 %
Vaughan's Post Hole—
6 in. $23 60; 9 in. $25 per doz dis 20 %

Awls and Tools.
Aiken's dis 25 %
Nos. 42 and 43 dis 35&10 %
Clark's dis 30&10 %

Axes.
Brook's per doz $12 00 @ 14 00 net
Blood's per doz $12 40 @ 14 00
Hunt's ℘ doz $14 00 @ 19 00 dis 5&5&5 % cash
Collins' ℘ doz 11 00 @ 15 50 net @ dis 5 %
Hurd's ℘ doz 12 50 @ 13 50
Simmons' ℘ doz 11 00 @ 11 50
Morris' ℘ doz 12 50 @ 13 50
Red Jacket ℘ doz 12 00 @ 12 50
Mann's ℘ doz 11 50 @ 13 00
Double Bitted ℘ doz 21 50 @ 22 00
Underhill's ℘ doz 12 00 @ 13 00
" Crown ℘ doz 12 50 @ 13 50
John Leverett's ℘ doz 12 50 @ 15 50
Ten Eyck ℘ doz $11 00 @ 12 50 net

Balances dis 35 %

Bands.
Plated new list dis 50&5 %
Iron Rim new list dis 25&5 %
Brass (Plated list) new list dis 50, 10&5 %
Orolde new list dis 50&5 %

Bells.
Hand, Light Brass dis 65&5&10 %
" Extra Heavy dis 40&10 %
" White Metal dis 50&10 %
" Silver Chime dis 15&10 %
" Swiss dis 25 %
" Globe dis 15&10 %
Gong, Abbe's dis 15&10 %
" Yankee dis 30&10 %
Crank, Taylor's dis 25 %
" Brook's dis 50 %
" Cone's dis 10 %
" Connell's dis 50&10 %
Lever, Sargent's dis 50&10&10 %
" Taylor's dis 25 %
" Hart, Bliven & Mead Mfg. Co dis 50&10 %
Pull, " " " " dis 50&10 %
" Brook's dis 50 %
" Western dis 25 %
Cow—Common Wrought dis 20&10 %
Western new list dis 20&10 %
Kentucky "Star" new list dis 20&10 %
Dodge's Genuine Kentucky new list dis 35 %
Yaw's Genuine dis 30 %
Texas dis 35 %
Call dis 15 %

Bellows.
Blacksmiths' dis 20 %
Moulders' dis 15 %
Hand Bellows dis 10 %

Blind Adjusters.—Domestic ℘ doz $3—dis 20 %

Blind Fasteners.
Mackrell's dis 30 %
Van Sand's ℘ gross $14 00
Washburn's Patent ℘ gross 14 00
Merriman's new list net

Blind Staples.
Boardman's Patent, ⅜ in. and larger ℘ ℔ 31 c
" ⅝ in " 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list dis 30 %

Bolts.
Cast Iron Barrel, Shutter, &c new list dis 60, 10&10 %
Wrought Iron Barrel new list dis 50, 10&10 %
" " Square new list dis 50, 10&10 %
Wrought Iron Flush dis 15&10 %
Carriage and Tire, Common dis 75&10 %
" " " Norway Iron dis 50&10 %
Star, Philadelphia dis 50 @ 50&10 %
Eagle, Philadelphia dis 50 @ 50&10 %
Carriage and Tire, R. B. & W old list dis 50&10 %
Plow, R. B. & W dis 30 %
Stove, R. B. & W dis 20 %
" Shelton Co, Shaved Heads dis 20 %
Union Nut Co., old list dis 50&20&5 %
" " Stove dis 15 %
Machine dis 40 @ 45 %

Borax 15c ℘ ℔

Boring Machines.
Kellogg's dis 15 %
Snell Mfg. Co., Rice's Patent dis 20 %
" " Regular dis 20 %
Douglas Mfg. Co dis 20&10 %
Morticing Machines each $18 00

Bow Pins.—Union Nut Co., new list dis 50&10&5 %

Braces.
Barber's Patent dis 40&5 %
Q. S. Backus dis 40&10 %
Wilson Mfg. Co new list dis 10 %
Spofford's Patent dis 40&5 %
Noble's Patent dis 40&5 %
Bartholomew's American Ball dis 10&10 %
" Patent Grip dis 40 %
Ives' Novelty dis 40&5 %
" Hamden dis 45&10 %
Common Ball dis 15&10 %

Brackets.—Shelf dis 60&10 %

Bull Rings.—Union Nut Co., new list dis 50&10&5 %

Bung Hole Borers.
Common and Ring dis 25 %
Enterprise Mfg. Co dis 20 %
Ives' Tap Borers dis 25 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co dis 20&10 %
Bradley's dis 25 %
Beatty's new list dis 20 %

2	3	4	5	6	7	8	9
$19.00	$21.50	$24.00	$27.00	$30.00	$33.50	$36.50	$40.00

Hart Mfg. Co dis 45&10 %

0	1	2	3	4	5	6
$25.25	$29.75	$30.25	$38.75	$43.55	$48.50	$54.00

Butts.
Wrought Brass new list dis 30 %
Cast Fast Joint, Narrow dis 40 @ 50&5 %
" " Broad dis 50&10 %
Cast Loose Joint, Narrow dis 55&10 %
" " Broad dis 60&10 %
" " Mayer dis 50 %
" " Parliament dis 50 %
Drilled Wire Jointed—
Narrow, High List dis 50&10 %
Broad dis 50&10 %
Loose Joint dis 60&10 %
Loose Pin dis 50&10 %
Wrought Fast Joint, Narrow dis 30&10 %
Wrought Broad dis 35&10 %
" Loose Joint dis 35&10 %
Wrought Table and Back Flaps dis 30&10 %
Lull & Porter's Blind Butts dis 50 %
Palmer Blind Butts dis 30&10 %
Nicholson Blind Butts dis 40&10 %
Parker's Blind Butts dis 55&10 %
Huffer's Blind Butts dis 33⅓&10 %
Clark's Surface Blind Hinges, Nos. 1, 3 and 5 dis 50&10 %
" " " " No. 40 and 50 dis 50&5 %
" " " " No. 20 dis 60&10 %
" Mortise " " 2, 4, 4½, 6, 8, 10 dis 33⅓ %
Seymour's dis 50&5 %
Shepard's dis 50&5 %
Garretson's No. 1, dis 50&10 %; Nos. 2 and 7 dis 50&5 %
The American Spiral Spring Butt Co dis 30 %
Standard dis 50&5 %

Caps—Percussion, per 1000.
G. D 37 @ 40c
Ely's E. B 1-4s, 58c.; 1-10s, 65c., gold
" Double Waterproof, 1-4s, $1.45; 1-10s, $1.52½c., gold
Colt's 1-10s 70c., gold

Carpet Sweepers.
Union each $2 75 net
Welcome each 2 75 net

Cartridges.
Metallic dis 50&10 %

Cards.—Horse and Curry dis 30&10 %
Cotton dis 10&10 %
Wool dis 15&10 %

Carpet Stretchers.
S. & W per doz $2 00; dis 40&5 %
Sargent's per doz $2.50—dis 50&10&10 %

Casters.
Bed dis 30&10 %
Plate dis 40&10 %

Cattle Leaders new list dis 60&10 %

Chain.
English Coil net gold

	3-16	¼	5-16	⅜	7-16	½
℔	13	9¼	8½	8¼	8	7¾c

Trace, 6½-10-2 by the cask, ℘ pair, gold 57c
Trace, 7-10-2 by the cask, ℘ pair, gold, 62c
Galvanized Pump Chain ℘ ℔ 13c
German Halter Chain new list, Jan. 1, dis 20 %
German Coil new list, Jan. 1, dis 20 %
Jack Chain, Iron dis 50 %
" Brass dis 40 %

Chalk.
White ℘ gross, 50c
Red ℘ gross, 75c
Blue ℘ gross, 90c
Crayons ℘ gross, 14c

Chisels.
Socket Framing, Douglass dis 60&10 %
" " Crossman dis 50&5&10 %
" " Hart Mfg. Co dis 60&10 %
" " Merrill dis 60&10 %
" Firmers, Douglass dis 50&10&10 %
" " Crossman dis 50&5&10 %
" " Hart Mfg. Co dis 60&5 %
" " Merrill dis 60 %
Socket Corner dis 60&10 %
Tanged Firmers dis 45&10 %
Butcher's $5.50 to £ gold—new list
Newbould's $5.50 to £ gold
Spear & Jackson's $5.50 to £ gold—new list

Clamps.
Cabinet dis 60&10 %
Judd's dis 45&10 %
Lambert's dis 20 %
Providence Tool Co dis 10 %

Clips, Axle.
Norway or Best dis 30 %
Superior dis 50 %
"Star," Superior Philadelphia dis 45&5 %

Coal Shovels.
Iron Handled ℘ doz, $ .85 @ 1 25
Wooden Handled ℘ doz, 1 00 @ 2 00

Coal Hods.—Smith, Burns & Co dis 15 @ 25 %

	14	15	16	17	18 inch.
Japanned	$6.00	6.35	6.75	7.50	8.00 per doz.
Galvanized	9.50	10.00	10.75	11.50	12.50 "

Morning Glory Funnel Hods—

No.	15	16	17
Japanned	$9.00	10.50	12.00 per doz
Galvanized	13.00	14.50	16.00 "

Sidney Shepard & Co.'s new list dis 10 %

Cockeyes 1¼ in., 34c.; 1½ in., 38c.; 1¾ in., 43c. net

Cocks.
Brass Racking dis 20&10 %
Lock and Globe dis 20&10 %

Coffee Mills.
Board and Box dis 15 %
Increase Wilson's now list dis 15 %
Selsor's Pat $9.50, $10.50—dis 25 %
French Steel dis 15 %
The Swift dis 25 %
"American" (Enterprise Mfg. Co) dis 20 %
Diamond, per doz $1 00 dis 10 %

Compasses and Dividers.
Bemis dis 35 %
Cook's dis 15 %
Excelsior dis 30 %
Peck Stow & Wilcox dis 25 %

Coopers' Tools.
Bradley's dis 15 @ 20 %
Chas. E. Little dis 20 @ 25 %
Swan & Brombacher dis 15 @ 20 %

Corkscrews dis 25 %

Corn Knives and Cutters.
Bradley's dis 10 %

Croquet.—Phineas Smith dis 40&10

Crow Bars.
Cast Steel ℘ ℔ 11c. net
Iron, steel points ℘ ℔ 6c

Crucibles.
Gautier & Co ℘ No. 5½c

Curling Irons ½ in., $1.80; ⅝ in., $2; ¾ in., $2.40 dis 10 %

Curry Combs.
Hotchkiss' and Kellogg's, Iron and Brass dis 20&10 %
Fitch's dis 15&10 %
Rubber ℘ doz, $9.00—dis 15 %
The Lawrence Curry Comb Co dis 25 %

Curtain Pins.—Silvered Glass old list dis 52½ %

Cutlery.
American Table net list
American Pocket dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co dis 20&10 %

Dippers.
Britannia per doz 7.50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain per doz $3.25—dis 20 %
" Rimmed per doz 3.75—dis 20 %

Dog Collars.
Embossed Gilt dis 20 %
Leather dis 20 %
Brass dis 25 %

Door Springs.
Gray's $7.50 ℘ doz—dis 50&10 %
Torrey's Patent $7.50 ℘ doz—dis 50&10 %
Palmer's Japanned No. 6 ℘ doz $5.00
" Coppered " " 6.00
" Silvered " " 8.00
Challenge.—
Japanned ℘ doz $4 00 @ 6 00 } dis 25 %
Bronzed ℘ doz 5 00 @ 7 00 }
Nickel Plated ℘ doz 6 50 @ 9 00 }
Gem.—No. 1 large, Japanned per doz $4.00
No. 2 medium per doz 3.50
No. 3 small per doz 3.00
In Gross Lots dis 10 %

Drawing Knives.
Crossman's No. 1 dis 50&5&10 %
Douglass dis 60&10 %
Hart Mfg. Co., No. 1 dis 60 %
Merrill dis 60&10 %
Bradley's dis 25 %
Adjustable Handle dis 15 %

Drills.
Ingersoll's Ratchet dis 25 %
Moore's Triple Acting Ratchet dis 20 %
Whitney's Ratchet dis 20 %
Blacksmiths' each $2 60 net

Drill Chucks.—The Danbury each 10.00, dis 25 @ 30 %

Drug Mills.
American Drug Mills (Enterprise Mfg. Co.) dis 20 %

Egg Beaters.
Monroe's 8 in. 10 in.
Per doz $8.00 9.00 dis 10 %
Dover ℘ doz net $6.00
National ℘ doz $4.50—dis 20 %
Peerless ℘ doz $4.00—dis 10 %

Emery.
Genuine Chester—Regular Nos ℘ ℔ 7c } dis 10 %
" Flour and FF ℘ ℔ 4c }
Washington Mills—Regular Nos ℘ ℔ 8c
" Flour ℘ ℔ 5c

Enameled and Tinned Ware.
Kettles dis 35 %
Sauce Pans dis 25 %
Glue Kettles dis 20 %
Tinned Saucepans dis 25 %

Escutcheons.
Brass Thread dis 60&10 %
Wood dis 25 %

Faucets.
Cork Lined, Wood dis 60&10 %
Fenn's dis 50 %
" Cork Stops dis 40 %
Star dis 55&10 %
Frary's Patent Petroleum dis 15&10 %
Taylor's Pattern " dis 20&10 %
Wood and Metallic dis 40 %

Felloe Plates ℘ ℔ 14c; dis 10 %

Files.
American File Co $5 00 to £ currency—dis 10 %
Nicholson $5 00 to £ currency—dis 12½ %
Hartford File Co $5 50 to £ currency—dis 10 %
Newbould's 5 25 to £ gold
Rothery's $5 to £ currency
J. & Riley Carr's Files and Rasps 5 50 to £ gold
Stubs' 8 50 @ 9 00 to £ gold
Butcher's 5 50 to £ gold
Walter Spencer & Co.'s "Diamond" 5 25 to £ gold
Spear & Jackson's 5 00 to £ gold
Jowitt's 5 25 to £ gold
"Western" 5 00 to £ net
W. K. & C. Peace's "Imperial" 5 25 to £ gold
R. Ibbotson 5 00 to £ gold
Fisher's 4 75 to £ gold
Goodlad's 4 00 to £ gold
Moss & Gamble 5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps 5 50 to £ gold
"Philo Sheffield," P. T. Co 5 00 to £ gold

Fluting Machines.
Mrs. Coles, 7 inch rolls 6 50
" " 5 " " 5 50
Knox, with 4-inch Rolls 4 40 each net
" " 6 " " 5 25 each net
O. K 6 50 each net
Peerless, 4-inch Rolls 4 00 each net
" 5 " " 4 75 each net
Excelsior, No. 1 4 75 each net
" No. 2 6 50 each net
Diamond 7 50 each net
Climax 7-inch Rolls 8 00 each net
" 4½ " 6 50 each net
Empire 4 00 each net
Eureka, No. 1, 7-inch Roll 8 00 each net
" No. 2, 5-inch Roll 6 00 each net
K. F. M., 4½-inch Roll 5 50 each dis 15 %
" 6-inch Roll 6 00 each dis 15 %
Myers' Fashion Fluter, 4½-inch Rolls 3 00 each net
" Convex Brass Fluter, Sad Iron attachment $1.75
Domestic Fluter $1.75 each net
Fairy, Self-Heater 3 00 each net
Geneva Hand Fluter $15 00 per doz net
Champion, 6 inch rolls $6 00 each dis 10 %
" 4 inch rolls $5 00 each dis 10 %

Fluting Scissors dis 25&10 %

Forges.
Keystone Portable Forge Co.'s dis 20 %
"Empire" (W. P. Kellogg & Co.) dis 20 %

Forks.
Hay, Manure & Spading dis 30 %
Plated A 1 dis 40, 10&5 %

Fry Pans.—P. S. & W.
Tinned dis 30 %

℘ doz	$3.00	3.25	3.62	4.00	4.50	5.00	5.50	6.00	7.50
No.	0	1	2	3	4	5	6	7	8

Smith, Burns & Co., "Excelsior" Polished dis 35 %

℘ doz	$3.70	4.00	4.70	5.30	6.00	7.00	8.00	9.00
No.	1	2	3		5	6	7	8

Gas Stoves.
Tiff & Howard dis 20 %

Gauges.
Marking dis 45&10 %
Wire dis 10 %

Gimlets.—Metal and Wood Head dis 25&10 %

Grind Stones.—J. F. Green & Bro dis 20 %

Grind Stone Fixtures dis 50&10 %

Hammers.
Emmet Hammer Co dis 25 %
Humason & Beckley Mfg. Co dis 16⅔&10 %
Maydole's, new list dis 5 %
Cheney's new list net
Verree dis 5 %
Yerks & Plumb dis 12½ %
Magnetic Tack dis 20&10 %
Warner's list net

Hand Cuffs and Leg Irons.
Tower's dis 25 %
Providence Tool Co.'s dis 10 %
Hand Cuffs $15 per doz
Leg Irons $25 "

Handles.
Wrought Chest dis 60&10 %
Flush Chest dis 60&10 %
Lifting dis 60&10 %
Coffin dis 50&10 %
Saw and Plane dis 20&10 %
Hammer and Hatchet dis 10 %
Greensboro', Axe, Pick, Hammer, &c dis 10 %
Woolworth Axe, Pick and Sledge dis 10 %
Brad Awl per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 10&10 %
" " " large " 6 25—dis 10&10 %
Apple " " ass'td " 6 00—dis 10&10 %
" " " large " 7 00—dis 10&10 %
Socket " " ass'td " 3 50—dis 10&10 %
" Framing " " " 6 00—dis 10&10 %
File " " 3 50—dis 10&10 %
Auger " " 5 50—dis 10&10 %
" large " 6 50—dis 10&10 %

Hangers.
Barn Door dis 65&10 %
"Anti-Friction" (Rider, Wooster & Co.) dis 30 %
Novelty dis 30 %

Harness Snaps.
Henshaw's dis 25&10 %
Judd's dis 40 %
Fitch's dis 30 %
Hotchkiss' dis 10 %
Andrews' dis 25 %
Sargent's dis 50&10 %
New York Wire dis 20&20 %

Hatchets.—Isaiah Blood dis 10 %
Shingling, Nos. 1 2 3 ℘ doz $7 50 8 00 8 50
Claw, " 1 2 3 ℘ doz 8 50 9 00 9 50
Lathing, " 1 2 3 ℘ doz 7 50 8 00 8 50
Hunt's dis 10 %
Shingling, Nos. 1 2 3 ℘ doz $7 25 8 00 8 75
Claw, " 1 2 3 ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ℘ doz 7 50 8 25 9 00
Hurd's dis 30 %
Shingling, Nos. 1 2 3 ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ℘ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s dis 25 %
Shingling, Nos. 1 2 3 ℘ doz $6 50 7 00 7 50
Claw, " 1 2 3 ℘ doz 7 25 7 75 8 25
Lathing, " 1 2 3 ℘ doz 6 50 7 00 7 50
Yerkes & Plumb dis 12½ %
Shingling, Nos. 1 2 3 ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ℘ doz 7 00 7 50 8 00
Simmon's dis 15 %
Shingling, Nos. 0 1 2 3 ℘ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3 ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ℘ doz 8 00 8 50 9 00
Broad, " 1 2 3 ℘ doz 9 00 10 00 12 00
" " 4 5 6 ℘ doz 14 00 16 00 18 00
" " 7 8 ℘ doz 20 00 22 00
Elephant dis 25 %
Shingling, Nos. 1 2 3 ℘ doz $8 00 8 50 9 00
Claw, " 1 2 3 ℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3 ℘ doz 8 00 8 50 9 00
J. P. Verree & Co dis 5 %
Shingling, Nos. 1 2 3 ℘ doz $7 00 7 50 8 00
Claw, " 1 2 3 ℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3 ℘ doz 7 00 7 50 8 00
Underhill's dis 10 %
Shingling, Nos. 1 2 3 ℘ doz 7 25 8 00 8 75
Claw, " 1 2 3 ℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3 ℘ doz 12 00 11 00 13 00

Hinges.
Gate, Western ℘ doz $6.25—dis 60&10 %
" N. E ℘ doz 11.25—dis 60&10&10 %
" N. Y. State ℘ doz 7.20—dis 60&10 %
Rolled Plate dis 75 %
" Raised dis 75 %
Wrought Strap and T dis 35 @ 10 %
Providence Plate. { 6 and 8 in. 7c ℘ ℔; over 8 in. 6c ℘ ℔ } net
Screw Hook and Strap { 8, 10, 12 in. 7c; 14 to 36 in. 6c } net
Heavy Welded Hook { 8 to 12 in., 9c; 14 in. & up, 8½c } dis 10 %
Screw Hook and Eye { ⅝ to 1 in., 9½c; ⅜ in. 10½c; ¼ in. 12½c } net

Hoes.
Solid Shank, C. S ℘ doz $8 00—dis 30 %
Socket ℘ doz 9 00—dis 30 %
Riveted Eye ℘ doz 5 00—dis 30 %
Grub dis 25 %
Planters'—Winsted add 10 %
Scovill add 33⅓ %
Scovill Pattern (Winsted) add 20 %

Hooks.
Harness dis 60, 10&5 %
Bird Cage dis 70&10 %
Cotton dis 50 %
Belt dis 50&10 %
Clothes Line dis 60&10&10 %
Bench—Skinner's per doz $8 00, dis 30&10 %
Bench—Hotchkiss' $5 00 ℘ doz dis 10 %
Bench—Weston's No. 1, $8.00; No. 2, $7.00 per doz net
" —McGill's $3 00 per doz, dis 10 %
Wardrobe, Japanned new list dis 60, 10&5 %
Hat and Coat " new list dis 60, 10&5 %
Wrought Staples and Hooks and Staples dis 70&10 %
Screw Hooks and Eyes, revised list dis 70, 10&10 %
Grass dis 20 %
Whiffletree—Patent dis 30 %
Hooks and Eyes—Malleable Iron dis 55 %
" " Brass dis 55 %

Horse Nails.
Putnam's.

No.	5	6	7	8	9	10
	22c	28c	26c	25c	24c	23c

In lots 2000 lbs. dis. 5 %.
Ausable Horse Nail Co.

No.	5	6	7	8	9	10
Ausable	30c	27c	25c	24c	23c	22c
Pointed and Polished	31c	28c	26c	25c	24c	23c
Pointed and Blued	32c	29c	27c	26c	25c	24c

In lots of 1000 lbs., 5% discount.
Brundage.

No.	5	6	7	8	9	10
	29c	26c	24c	23c	22c	21c

In lots of 500 lbs., dis. 5 %.
American Pressed.

No.	5	6	7	8		10
	22c	20c	20c	20c	20c	20c

In lots of 1000 lbs. dis 5 %.
Perkins Finished (ready to drive).

No.	5	6	7	8	9
	31c	28c	26c	25c	24c

In lots of 1000 lbs. dis 5 %.
Buffalo Forged.

No.	6	7	8	9	10
	28c	26c	25c	24c	23c

Globe (Pointed and Polished).

No.	5	6	7	8	9	10
	31c	28c	26c	25c	24c	23c

In lots of 1000 lbs., 5 % discount.
National (Pointed and Polished).

No.	5	6	7	8	9	10
Patent Finish	28	25	23	22	21	20
Extra "	30	27	25	24	23	22

In lots of 1000 lbs., dis 5 %.
Vulcan (Blued, pointed, ready to drive).

No.	5	6	7	8	9	10
	33c	30c	28c	27c	26c	25c

In lots of 500 lbs., 5 % discount.
" 1000 lbs 7½ % discount.
New London Horse Nails.

No.	6	7	8	9	10
Great Western	27c	25c	24c	23c	22c
U B	29c	27c	26c	25c	24c

In lots of 1000 lbs., dis 5 %.
Star Brand ℘ ℔ 16c
Morgan 14c

Horse Shoes.
Burden ℘ keg, $5 85
R. I. Horse Shoe Co., Perkins Pattern ℘ keg, 5 85
" " R. I. Pattern ℘ keg, 6 35
Mule Shoes ℘ keg, 6 85

Kettles.
Brass ℘ ℔ 55c net
In lots of 500 ℔s ℘ ℔ 50c net

Knives.
Ames' Butcher Knives dis 20 %
" Shoe " dis 15 %
" Bread " ℘ doz $1.50—dis 15 %
Hay and Straw. "Wadsworth's" dis 20 %
Lothrop's Cocoa Handle Lap Bolster Butcher Knives dis 25 %

Knobs.
Carriage dis 60&10 %
Base—Common net
" Plush Tip dis 10 %
" Elastic End, No. 8 dis 30&10 %

Ladles.
Melting dis 20 %

Lanterns.
Peerless per doz $11.75—dis 10&10 %
Brady's Patent dis 10 & 10 %
Ætna dis 10 & 10 %
Yankee dis 10 & 10 %
De Beque dis 10 & 10 %

Lard Presses.
Draw Cut, 14 inch each $65 00—dis 20 %

Lemon Squeezers.
Porcelain Lined per doz $7 00, dis 10 %

Lines.
Linen Fish dis 10&10 %
Cotton Chalk dis 40 %
Silver Lake Chalk dis 10&10 %
Mason's dis 10&10 %
Galvanized Wire Clothes $1 per 100 ft. dis 30 %

Locks and Latches.
Cabinet—Eagle dis 33 %
Cabinet—Gaylord dis 25 %
Langstroth & Crane dis 40 %
Trunk dis 25 %
Continental dis 15 %
Shepardson's dis 30 %
Wilson Bohanan's Pad Locks dis 25 %
Romer's Padlocks dis 15 %
Scandinavian Jail dis 10 %
American Lock Co dis 33⅓ %
Plate dis 25 %
Pad dis 50&5, and 2 % for cash
Barnes & Deitz dis 25 %
Yale Lock Co dis 40 %
Sargent & Greenleaf dis 20 %
Trenton, Branford, Norwich, Russell & Erwin, Norwalk, Nashua, Mallory, Wheeler & Co., P. & F. Corbin, Parker & Whipple, Jacobus & Nimick Mfg. Co. } dis 45&5 %. 2 % extra for cash.

Mallets.
Hickory and Lignumvitæ dis 20 %

Meat Cutters.
Dixon's (P. S. & W.) dis 10 %

No.	1	2	3	4
℘ doz	$14 00	$17 00	$19 00	$30 00

Hales' dis 25 %

No.	11	12	13
℘ doz	$27 00	$33 00	$42 00

Miles Challenge dis 20 %

No.	1	2	3
℘ doz	$22.00	$30.00	$40 00

Perry's Champion (P. S. & W.) dis 10 %

No.	200	300	400
℘ doz	$22 00	$27 00	$40 00

Woodruff's (P. S. & W.) dis 10 %

No.	100	150
℘ doz	$15 00	$18 00

American dis 25 @ 25&5 %

No.	1	2	2½	3	4	B	5
Each	$6.00	$9.00	$12.00	$15.00	$30.00	$60.00	$75.00

Draw Cut dis 20 %

No.	5	6	8
Each	$56.00	$90.00	$250.00

Molasses Gates.
Stebbins' dis 65&10 %
Tinned ends dis 40&10 %
Patent Self-Measuring per doz $42 00—dis 20 %
Bush's dis 20 %
Lincoln's dis 50&10 %

Mortars and Pestles.
Iron net

Mouse Traps.
Wood Choker ℘ doz holes, 15 @ 16c
Round, Wire ℘ doz $1 50 to 2 00 net
Square, " ℘ doz 2 00 to 2 50 net
Cage, " ℘ doz 2 50, dis 10 %

Nails See Trade Report

Nail Pullers.
Capewell's Giant per doz $30 00 net

Nuts and Washers.
Nuts large, 6c; small, 8c off list.
Washers large, 8c; small, 10c off list.

Oil Stones.
Washita No. 1 ℘ ℔ 22c
Washita Slips ℘ ℔ 45c
Washita No. 2 ℘ ℔ 17c
Arkansas ℘ ℔ 1 25
Hindostan ℘ ℔ 6c dis 10&10 %
" Slips ℘ ℔ 10c dis 10&10 %

Oilers.
Miller's Zinc dis 40 %
" Brass and Copper dis 25 %
Olmsted's new list dis 25&10 %
Broughton's dis 25&5 %
Malleable per doz $5 00 dis 10 %
Common Tin dis 30&10 %
" Zinc dis 30&10 %
" Brass and Copper dis 30&10 %
Prior's Patent or "Paragon" dis 30&10 %

Ox Shoes.
Concave ℘ ℔ 13c net

Ox Balls dis 60&10 %

Pencils
Rope's Carpenters' dis 30&10 %
Dixon's Lead ℘ gross $4.50 net
" Lumber ℘ gross 9.00 net

Picture Nails and Knobs.
Brass Head dis 60&10 %
Richards' Patent dis 40 @ 40&10 %
Judd's dis 60&10 %

Pinking Irons per doz $2 75—dis 45 %

Planes.
Auburn Tool Co.'s dis 30&10 %
Ensenore, Bench dis 50 %
Chapin's 1st quality dis 20&10&10 %
Chapin's 2d quality dis 45&10 %
Greenfield Tool Co dis 25&10 %
"New York" dis 40 %
Sandusky Tool Co., 1st quality dis 35 %
" " 2d " (Ogontz) dis 50 %
Ohio Tool Co., 1st quality dis 35 %
" 2d quality (Sciota) dis 50 %
Owasco Tool Co., 1st quality dis 30&10 %
" 2d quality dis 50 %
Howland's 1st quality dis 30&10 %
" 2d quality (Cayuga) dis 40&10 %
Bailey's Patent Adjustable dis 20&10 %
Plane Irons, Butcher's $5 50 to £ gold—new list
" Auburn Tool Co.'s dis 25 %
" Chapin's dis 10&10 %
" Greenfield Tool Co net list
" Ohio Tool Co dis 10 %
" Spear & Jackson's 5 50 to £ gold—new list
" Sandusky Tool Co dis 10 %
Plow Bits, Greenfield Tool Co dis 10 %

Pliers.
Button's Patent dis 33⅓ %

Plumbs and Levels.
Chapin's dis 66⅔&10 %
Standard Rule Co.'s New Adjustable dis 60&10 %
Standard Rule Co.'s Non-Adjustable dis 60&10&10 %
Stanley R. & L. Co.'s Pat. Adjustable dis 65&10 %
" " " Non-Adjustable dis 60&10&10 %
Pocket Levels dis 50&10 %
Johnson's Patent Adjustable dis 60&10 %

Pulleys.
Hot House and Tackle dis 60&10 %
Jap'd Screw dis 60&10 %
Brass Screw dis 60&10 %
Jap'd Side dis 60&10 %
" Clothes Line dis 60&10 %
Hay Fork per doz $4 50 @ 5 00, dis 10 %

Pumps.
Douglas Cisterns, etc new list dis 25 %
" S. & F new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher dis 25 %
" " " Rams dis 20 %
" " " Garden Engines dis 10 %
Cucumber (Burlingham & Purdy)—
6 ft. No. 3, with 12 ft. pipe $4.00 net
6 ft. No. 1, with 12 ft. pipe 4.50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe, 8c. per ft.; Coupling, 20c. per ft.

Punches.
Belt or Drive dis 25 %
Spring per doz $7.00—dis 20&10 %

Rail, Sliding Door.
Wrought Brass ℘ ℔ 44c., dis 10 %
Iron, Painted dis 10&10 %

Rakes.
Cast Steel dis 30 %

$8 00	9 00	10 00	11 00
8	10	12	14 teeth.

Malleable dis 30 %

$5 00	5 50	6 00	6 50
9	11	13	15 teeth.

Razor Straps.
Evan's dis 25&10 %
Genuine Emerson (B. F. Badger) dis 25 %
Imitation Emerson ℘ doz $2.75—dis 35 %
Hunt's dis 40 %
Chapman dis 10 @ 15 %
Torrey's dis 10&10 %
Saunder's net

Rivets.—Old Colony.
Iron and Tinned dis 30 %
In bulk dis 7½ %
Copper Rivets and Burrs new list dis 30 @ 35 %

Rivet Sets net

Rods.
Stair new list dis 30 %
American Patent dis 30 %

Rollers.
Barn Door revised list dis 60, 10&10 %
Novelty dis 10 %

Rope. Manufacturers' List.
Manila ½ inch and larger ℘ ℔ 15 c
" ⅜ inch ℘ ℔ 15½c
" ¼ and 5-16 inch ℘ ℔ 16 c
" Lath Yarn, Fine Tar'd ℘ ℔ 16 c
" Hay Rope ℘ ℔ 15½c
Sisal ½ inch and larger ℘ ℔ 11½c
" ⅜ inch ℘ ℔ 12 c
" ¼ and 5-16 inch ℘ ℔ 12½c
" Hay Rope ℘ ℔ 12 c

Rules.
Chapin's Boxwood dis 66⅔&10 %
" Ivory dis 50&10 %
Hubbard & Curtiss Mfg. Co dis 60&20 %
Stanley Rule and Level Co.'s Ivory dis 50&10 %
" " Boxwood dis 60&10&10 %
Standard Rule Co.'s Boxwood dis 60&10&10 %
" " " Ivory dis 50&10 %

Sad Irons.
℘ ℔ 4c net
Sad Iron, Nickel Stand attached ℘ ℔ 9c
H. B. & M. Roman Flint dis 15 %
Cowdin Mfg. Co dis 7½ @ 10 %
Diamond Flint, 00 to 1½ per ream $4 25
" " 2, 2½, 3 and assorted " 4 75
" Emery Paper per ream $6 50 to $11 50

Sand Paper.
Beader & Adamson's (Flint) 00 to 1½ $4 25 ℘ ream } dis 15 %
" " 2, 2½ & 3 4 75 "
" " Assorted 4 25 "
" " Star ℘ ream $3 25
" " Emery ℘ ream $6 50 @ 11 50

Sash Cord.
Common ℘ ℔ 20 @ 22c. net
Silver Lake White Flax ℘ ℔ 55c. net
" Drab Cotton ℘ ℔ 60c. net

Sash Locks.
Clark's, Nos. 1 and 2 dis 33⅓ %
Ferguson's dis 33⅓ %
Norwich dis 15 %
Walker's list net

Sash Weights.
Solid Eyes ℘ ℔ 2½c

Sausage Fillers.
Perry's (P. S. & W.) dis 15 %

No.	1	0
℘ doz	$15 00	$21 00

Sausage Stuffers.
Miles ℘ doz $30—dis 10 %
Stow ℘ doz No. 1, $15; No. 0, $21—dis 15 %
Draw Cut No. 4 each $30 00—dis 20 %

Saw Frames per gross $18 00—dis 10&10 %

Saw Rods $10 list, dis 10&10 %

Saws.
Spear & Jackson's oldpattern $4 50 to £ gold
Spear & Jackson's American Pattern $3.55 to £ gold
John Spear $3 60 to £ gold
Am. Saw Co new list
Perforated Cross Cuts, all kinds 68c ℘ foot
Inserted Tooth dis 10 %
All else dis 12½ %
Disston's Circular dis 20 %
" Mill dis 25 %
" Cross Cut dis 15 %
" other kinds dis 12½ %
Livingston's Framed Wood dis 10 %
Livingston's Butcher and Kitchen dis 10 %
H. W. Peace's Circulars dis 10 %
Other kinds dis 10 %
Wm. McNiece's Hand, Cross Cut and Circular new list dis 15 %
Wm. McNeice's Patent Pole Pruning Saw dis 10 %
" " " Compass Saw net.
E. M. Boynton's Lightning dis 40 % for immediate cash
" " Others dis 15 %
Wheeler & Clemson Mfg. Co.'s Hand dis 15 %
" " " " Cross-Cut dis 30 %

Saw Sets.
Stillman's Genuine ℘ doz $5.00—dis 10 %
" Imitation ℘ doz 3.25—dis 10&10 %
Aiken's Pattern ℘ doz 7.00—dis 25&10 %
Hart's Patent dis 15 %
Nash's dis 20&10 %
Bemis' dis 10 %
Aiken's Genuine ℘ doz $15.00—dis 25 %
Hotchkiss' ℘ doz 5.50—dis 10 %
Common Lever per doz $2 00—dis 10&10 %
Leach's dis 15 %

Scales.
Hatch, Counter ℘ doz $36—dis 25 %
" Tea ℘ doz $15—dis 25 %
Turnbull's dis 20 %
Brown's dis 25&5 %
Fairbanks' new list dis 15 @ 20 %
Howe's dis 15&5 %
Shattuck's Counter and Union dis 15 %
Chatillon's Grocers' dis 25 %
Eureka dis 25 %
Scale Beams dis 25&10 %
No. 1 300 to 1200 lbs 90c ℘ cwt
No. 2 " " 75c ℘ cwt

Scrapers.
Box, 1 Handle per doz $6.25, dis 10 %
" 2 " per doz 7.50, dis 10 %
Foot dis 60 & 10 %
Ship (common) per doz $3 00 net
Ship—Providence Tool Co dis 10 %

Screws.
American list of Jan. 1, 1874.
Flat Head Iron dis 52½ %
Round Head Iron dis 50 %
Flat Head Brass dis 52½ %
Round Head Brass dis 50 %
Round Head Silver Capped dis 35 %
Hand Rail dis 55&10 %
Coach or Lag dis 30&10 @ 40 %
Coach, Patent Gimlet Point dis 15 %
Bed list net
Japanned dis 40 %
English—Nettlefold & Chamberlain's Flat Head Iron dis 52½&10 %
Machine—Flat Head, Iron dis 60 %
" " Brass dis 10 %
Round Head, Iron dis 55 %
" " Brass net
Birmingham Screw Co. (A. Field & Co.), Flat Head Iron dis 52½&10 %
Bench—Iron dis 60, 10&10 %
" —Wood dis 15 %
Hand dis 25&10 %
Jack—Bell Bottom dis 15 %

Scythes.
Blood's German Steel, Grass ℘ doz $9 00
" Cast " " ℘ doz 10 00
" Silver " " ℘ doz 11 00
" German " Grain ℘ doz 13 00
" Cast " " ℘ doz 14 00
" Red Rover 12 00
" Young America 9 50
" Silver Clipper 12 63
Scythe Snaths dis 20 %

Sieves.—Mann's Patent dis 25 %

Shears.
Cast Steel dis 70&10 %
Cast Iron dis 25&10 %
Seymour's dis 60&10 %

Shovels and Spades.
Ames new list dis 12½ %
Rowland's dis 25 %
Old Colony new list dis 10&5 %
Middleboro' Shovel Co new list dis 12½ %
Dunning's Shovels and Scoops dis 20 %

Shovels and Tongs.
Iron Head new list } dis 50 %
Brass Head new list }
Polished Steel new list }

Skates.
Barney & Berry's
N. Y. Club ℘ pair $2.75 } dis 25 %
B. & B. Club " 3.50 }
All Clamp " 4.25 }
Rink " 8.00 }
Florence Club per pair $3.50—dis 25 %
" Steel per doz $9 net

Slates.
Square Frames, Round Cornered, by case dis 65&10 %
Less than a case dis 65 %
Oval Frames, by case dis 40 @ 40&10 %
Less than a case dis 30 %

Spoke Shaves.
Iron dis 33⅓&10 %
Wood dis 30 %
Bailey's dis 10&10 %

Spoons.
Iron new advanced list, dis 10 %
By the case dis 20 %
Britannia dis 45&10 %
Rogers & Bro., A 1 dis 40, 10&5 %, cash
Derby Silver Co dis 50 & 5 %
Holmes, Booth & Haydens dis 50&10 %
Nickel Silver Co dis 40&10 %
German Silver revised list dis 30 %
Tinned (P. S. & W.)—
Teas $1.50 ℘ gross, net
Tables 2.75 " net

Stocks and Dies dis 15 %

Stove Polish.
Gem ℘ gross $5 00, dis 15 %
Joseph Dixon's ℘ gross, 6 00
Gold Medal ℘ gross $6 00 dis 15 %

Squares.
Steel dis 50 %; full cases, dis 50&10 %
Iron dis 50 %; full cases, dis 50&10 %
Nickel Plated add $2 50 @ $4 00 ℘ doz net
Try Squares and T Bevels dis 45&10 %
Star Try Squares and Bevels dis 30 %

Tacks.
Full Weight American Iron dis 45&7½ %
Half Weight American Iron dis 72½&7½ %
Carpet, new list dis 7½ %
Brads American Half Weight dis 50&7½ %

Finishing Nails	⅜	½	¾	1	1¼ in. and over	
℘ ℔	25c	20c	18c	14c	12c	dis 7½ %
Trunk and Clout	⅜	½	¾	1	1¼ in. and over	
℘ ℔	25c	20c	18c	14c	12c	dis 7½ %

Copper Tacks ℘ ℔ 50c—dis 7½ %
Iron Shoe Nails, ℘ ℔ 4-8 and longer, 9½c; 3½-8, 10c dis 7½ %
Double Pointed new list dis 33⅓&10 %

Tapes, Measuring.
American Flask and Cap Co dis 20 %
Eddy's dis 20 %

Thermometers.
Tin Case dis 50&10 %

Toe Calks. ℘ ℔ 13c net

Tobacco Cutters.
Champion dis 20 %
Peck, Stow & Wilcox dis 10 %
Morse's ℘ doz $12.00—dis 10&10 %
Wood Bottom per doz $12—dis 33⅓ %
All Iron per doz $12—dis 33&10 %

Tinners' Tools and Machines.
P. S. & W list net

Traps.
Newhouse dis 20 %
Hotchkiss dis 20&10 %
Peck, Stow & Wilcox dis 30 %
Blake's Patent new list dis 25 %

Trowels.
Lothrop's Brick and Plastering dis 10 %
Disston's Plastering dis 12½ %
Disston's Brick dis 12½ %
Rose's Brick dis 5 %
Brades' Brick gold. dis 10 %
Worrall's Brick and Plastering dis 20 %
Garden dis 25 %

Triers.
Butter and Cheese dis 25 %

Ventilators, Double Cone.
Keystone Portable Forge Co dis 25 %

Vises.
Trenton Vises, Solid Box.
30 to 160 lbs 16c
160 and over 15c
Peter Wright's ℘ ℔ 15½c. gold
Wilson's Solid Box dis 15 %
30 to 160 lbs 18c
160 and upward 22c
Wilson's Parallel dis 30 %
Backus & Union, Parallel dis 25 %
Buffalo, Parallel new list dis 25 %
Fisher & Norris' Double Screw Parallel dis 15&10 %
Trenton Parallel dis 15 %
Merrill's Parallel dis 15 %
Parker's dis 20 %
Stephens' Parallel dis 15 @ 20 %
Bonney's Saw Filers per doz $30—dis 25 %
Stearn's Saw Filers per doz $30—dis 25 %

Wheel Barrows.
Pugsley & Chapman dis 25 %

Wheel Heads.
Brass Bushed per doz $3 50 net

Well Wheels.
Revised list dis 60&10 %

Wire.
Brass and Copper dis 10 %
Bright and Annealed Nos. 0 @ 18 dis 40 @ 45 %
" " 19 @ 26 dis 50 @ 55 %
" " 27 @ 36 dis 55 @ 60 %
Coppered " 0 @ 18 dis 30 @ 32½ %
Galvanized, Nos. 0 to 6 market list net @ dis 5 %
Galvanized, Nos. 7 to 18 market list dis 10 @ 15 %
Tinned dis 25 @ 30 %
Cast Steel 15 @ 20 %
Tinned Broom Wire dis 25 @ 30 %
Galvanized Telegraph, Nos. 8 and 9 ℘ ℔ 9c @ 10c

Galvanized Telegraph. Nos. 10 and 11... ₩ lb 10½c @ 11¼c
" " " 12 ... ₩ lb 10½c @ 11¼c
Annealed Fence. Nos. 8 and 9 ... dis 40 @ 45 %
" Grape, " 10 to 14 ... dis 40 @ 45 %
Fence Staples ... ₩ lb 8 @ 8½ %
Stubs' Steel Wire ... $7 00 to £ gold
Judd's Picture Wire ... dis 50

Wrenches.
American Adjustable ... dis 45 %
Baxter's Adjustable "S" ... dis 20 %
" Diagonal ... dis 20 %
Collins & Co.'s ... dis 45 %
Coes' Genuine ... dis 40&5 %
" Pattern (Wrought) ... dis 50 %
" " (Malleable) ... dis 60&10 %
Lindsay's Patent ... dis 25 %
Taft's Pattern ... dis 70 %
Davis' Patent Duplex ... new list dis 25 %
Bemis & Call's Patent Combination ... dis 20&5 %

Wringers.
Providence ... ₩ doz $60 00
"Reliance" (P. F. Co.) ... ₩ doz 58 00
Universal—Extra ... ₩ doz 60 00
Novelty ... ₩ doz 60 00
Sherman ... ₩ doz 60 00
Reliance ... ₩ doz 60 00
Monitor ... ₩ doz 60 00
King ... ₩ doz 60 00
Crown ... ₩ doz 60 00
Eureka ... ₩ doz 60 00
Independent ... ₩ doz 60 00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 10 %.
COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½	1	2	3	4
Inch	4½	5 8-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts		6	8	10	12
Inch		8⅝	9¼	9½	10 9-16
Per gross		$7·00	8·00	8·50	11·50

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12¼	13¼
Per gross	$15·00	18·00	22·00

Pot Covers.

Inch	7¾	8¼	8¾	9¼	9¾	10¼
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11¼	11¾	12¼	12¾	13¼
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	·50	6·00	6·50	8·50	10·50

Deep Pie Plates.

Inch	9	10
Per gross	$8·50	10·50

Jelly Cake Pans.

Inch	9	10
Per gross	$7·50	10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	8	8¾	3¾	4½	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2¾	3	3½	4	4½ inches.	
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7½	8	8½	9	9½	10	10½	11	11½
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.

Sheet	½	¾	1
Per gross	$3·00	6·00	11·50

Scolloped Cake Pans.

	Small.	Large.
Without Tubes ... per gross,	$8·00	11·50
With Tubes ... "	10·50	14·00

Stamped Square Pans.

No.	½	1
Per gross	$7·50	14·50

Common Square Pans (One Sheet).
Per gross ... $12·50

Milk Skimmers (Plain or Pierced).
Per gross ... $4·00

Lettered Plates.

Inch	5½	6
Per gross	$3·25	4·00

Steamer Bottoms.
Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain ... per gro.	$4·50	5·00	5·50	6·00	6·50	7·50
Jap'd or Burn'd	6·00	6·50	7·00	8·00	8·50	10·00

Coffee Boiler Lips.

	Small.	Large.
To Rivet ... per gross,	$0·80	1·10
To Solder ... "	1·25	

Plain Stamped Water Dippers.

	½ pint.	Pint.	Quart.	2 quarts.	2½ quarts.
Per doz	·90	1·15	1·50	1·85	2·50

RETINNNED WARE, dis 25 %.

Retinned Milk Pans.

Qts.	½	1	1½	2	3	3½	4	5	6	8	10	12
₩ doz.	1·20	1·50	1·75	2·00	2·25	2·75	3·15	3·50	3·85	4·15	5·25	5·75

Dipper Bowls, Plain Stamped ... dis 20 @ 25 %
Pints ½, 1; Quarts 1, 2, 2½
Per doz. ·50, ·75; Per doz. 1·00, 1·25, 1·75
Dipper Bowls, Retinned ... dis 20 @ 25 %
Pints ½, ¾, 1; Quarts 1, 2, 2½
Per doz. ·75, ·90, 1·05; Per doz. 1·40, 1·75, 2·25

Pans.
Dish Pans, Tinned ... dis 20 @ 25 %

Quarts	7	8	10	14	17	21	30
Per doz.	8·50	9·50	11·00	13·00	16·00	19·00	30·00

JAPANNED TIN WARE.
Cannisters, Common ... dis 10 %
Pound ½, 1, 2, 3
Per doz. $1·10, 1·60, 2·50, 3·25
Canisters, Hinged ... dis 10 %
Pound 1, 2
Per doz. $1·75, 2·75, 3·40, 3·75, 4·50
Candlesticks, Japanned ... dis 10 %
No. 1, 2
Per gross $8·00, 7·00
Cake Boxes, Round ... per nest, $6·25, dis 10 %
" Square ... per nest, 4·25, dis 10 %
Chamber Pails, Japanned (Smith, Burns & Co.) ... dis 10 %
Nos. 2, 3, 4, 5
Green, per doz. $8·00, 9·00, 10·50, 12·50
Oak " $9·50, 10·50, 12·00, 13·50
Dust Pans, Corrugated ... per gross, $22·00, dis 10 %
Box Graters ... per gross, $4·00, dis 10 %
Molasses Cups ... dis 10 %
Pint ½, 1, 2
Per doz. $1·25, ·90, 2·7
Lunch Boxes, per doz. ... 7 in. $2·00; 8 in. $2 50; dis 10 %
Pepper Boxes Japanned ... dis 10 %
Per gross ... Small, $3·00; Large, $4·00
Toy Banks, House ... dis 0 %
Tea Trays, American Tea Tray Co. ... dis 15 %
No. 1, 2
Per gross $7·00, 5·50
Toy Banks Gothic ... dis 10 %
No. 1
Per gross ... $5·50
Toy Cups, Straight ... dis 10 %
No. 1, 2, 3
Per gross $4·00, 2·50, 3·51
Toy Cups, Flaring ... No. 1, $4·25; 2, $3·70 ₩ gross, dis 10 %
Toy Pails, Covered ... dis 10 %
No. 1
Per gross ... $4·5
Toy Rattles ... per gross, $2·25, dis 10 %
Trunks, Wire Handled ... per nest (5) $1·50, dis 10 %
Spittoons, Tin ... per gross, No. 2, $30, No. 3, $27, dis 10 %

PLANISHED TIN WARE.
Planished Coffee Pots, Round ... dis 25 @ 30 %
Each ·60, ·75, ·85, ·95, 1·15, 1·25, 1·30, 1·40
Pints 1, 2, 3, 4, 5, 6, 7, 8
Planished Tea Pots, Round ... dis 25 @ 30 %
Each ·70, ·80, ·95, 1·05, 1·25
Pints 2, 3, 4, 5, 6
Planished Tea Pots, Oval ... dis 25 @ 30 %
Each ·70, ·80, ·90, 1·05, 1·15, 1·40, 1·75
Pints 1, 2, 3, 4, 5, 6, 8
Planished Pepper Boxes, No. 1 ... per doz., $1·52
Planished Flour Dredges, No. 3, $2·10; 4, 2·45 ₩ dozen.
Planished Round Coffee Biggins ... dis 25 %
Pints 2, 3, 4, 5, 6, 8
Each $1·00, 1·10, 1·20, 1·40, 1·60, 2·00
Planished Oval Coffee Biggins ... dis 25 %
Pints 2, 3, 4, 5, 6, 8
Each $1·15, 1·25, 1·40, 1·60, 1·80, 2·25
Planished Oval Chafing Dishes, Imperial Covers ... dis 25 %
Inch 10, 12, 14, 16, 18, 20, 22, 24
Each $3·85, 5·00, 6·25, 7·60, 9·00, 11·50, 15·00, 16·50
Planished Oval Chafing Dishes, Low Covers ... dis 25 %
Inch 10, 12, 14, 16, 18, 20
Each $3·25, 4·35, 5·20, 6·20, 7·80, 9·25
Planished Low Dish Covers ... dis 25 %
Inch 10, 11, 12, 14, 16, 18, 20
Each $·70, ·80, 1·00, [illegible], 1·50, 2·00, 2·75
Planished Imperial Dish Covers ... dis 25 %
Inch 10, 11, 12, 14, 16, 18, 20, 22, 24
Each $1·55, 1·70, 2·00, 2·60, 3·15, 3·45, 4·60, 5·45, 6·80
Planished Etnas, on Stands ... dis 25 %
Pints 1½, 2, 3, 4, 5
Each $0·90, 1·00, 1·20, 1·50, 1·75
Planished Liquor Mixers ... dis 25 %
Nos. 0, 1, 2
Per doz. $2·00, 2·10, 2·45
Planished Oval Melon Molds ... dis 25 %
Nos. 2, 3, 4, 5, 6, 7, 8, 9
Each $·60, ·65, ·70, ·80, ·90, 1·00, 1·15, 1·35
Planished Oval Tumbler Warmers ... dis 25 %
To fit 1, 2, 3, and 4 O. G. Urns ... each, $2·50
Planished Oval O. G. Urns ... dis 25 %
Nos. 0, 1, 2, 3, 4, 5, 6, 7, 8
Each $4·90, 5·45, 6·20, 7·00, 7·75, 9·25, 11·25, 12·50, 15·50
Planished Round Urns ... dis 25 %
Nos. 0, 1, 2, 3, 4, 5, 6, 7
Each $4·20, 4·85, 5·45, 6·20, 7·25, 9·00, 11·00, 14·25
Planished Round Oyster Dishes, (Complete) ... dis 25 %
Nos. 1, 2
Each $2·10, 2·80
Planished Oyster Dish Plates ... dis 25 %
Nos. 1, 2
Each $0·25, 0·30
Oyster Dish Covers ... dis 25 %
Nos. 1, 2
Each $0·20, 0·25

Tea Pot Handles—P. S. & W. ... dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4½ inches ... per gross, $11·50
No. 2, Medium, 5½ " ... " 12·50
No. 3, Large, 6½ " ... " 13·50
No. 4, Ex. Large, 7½ in., for Wash Pitchers &c. ... " 18·00
Stow's Patent. New Pattern.
No. 25, Small, 4½ inches ... per gross, $11·50
No. 35, Medium, 5½ " ... " 12·00
No. 45, Large, 6½ " ... " 13·00
Solid Iron. Tin Tipped.
No. 10, Small, 4½ inches ... per gross, $9·00
No. 15, Medium, 5½ " ... " 9·50
No. 20, Large, 6½ " ... " 10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W.
No. 12. Bronzed and Tin-Tipped ... per gross, $12·50
Saucepan Handles. Or See Malleable Iron.
P. S. & W ... dis 20 %

Japanned.
No. 1, 5½ inches long ... per gross, $3·50
No. 2, 6 " ... " 3·75
No. 3, 6½ " ... " 4·00
No. 4, 7½ " ... " 4·25
No. 5, 8 " ... " 4·50
No. 6, 9 " ... " 4·75

Tinned.
No. 1, 5½ inches long ... per gross, $4·25
No. 2, 6 " ... " 4·50
No. 3, 6½ " ... " 4·75
No. 4, 7½ " ... " 5·25
No. 5, 8 " ... " 5·50
No. 6, 9 " ... " 5·75
Japanned ... per lb., ·16
Tinned ... " ·20
Iron Kettle Ears (P., S. & W.) ... dis 45 %
Half gross pairs in a package.

Tinned.

Nos.	1	2	3	4	5	6	7	8
Per gross pairs	·88c	$1·00	1·50	1·75	2·10	2·75	3·50	4·75

Black.

Nos.	1	2	3	4	5	6	7	8
Per gross pairs	·75c	88c	$1·35	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle.

Nos.	4	5	6
Per gross pairs	$1·75	2·10	2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos.	1	2	3	4	5	6	7
Per gross pairs	$1·00	1·25	1·50	1·75	2·25	2·75	3·50

Malleable Iron Kettle Ears for Coal Hods, &c.
P., S. & W. ... dis 20 %
No. 10 Small ... ₩ lb, Tinned, 20c; Black, 16c
No. 20 Medium ... ₩ lb, " 20c; " 16c
No. 30 Large ... ₩ lb, " 20c; " 16c
No. 40 Extra Large ... ₩ lb, " 20c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in. dis 25
Plain, 8c.; Jap'd, 9c.; Tinned, 16c. per lb.; Malleable Clips or Ears to match, Tinned ... 20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.) ... dis 35 %
Plain with drilled holes, per lb. ... 9c
Plain with Cast " ... 8c
Plumbers' Scrapers—(P. S. & W) ... dis 25 %
Extra quality, length 6 in., per doz. ... $4·00

METALS.

IRON.—DUTY Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. All subject to a reduction of 10 per cent. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.
Foundry No. 1 ... ₩ ton, $27 00 @ 28 00
Foundry No. 2 ... " 25 00 @ 27 00
Gray Forge ... " 23 00 @ 24 00
White and Mottled ... "

SCOTCH.
Coltness ... " 40 00 @ 41 00
Glengarnock ... " 39 00
Eglinton ... " 37 00
Summerlee ... "

Bar Iron.
Am. Refined, at mill ... nominal ... ₩ lb 2·8c

Rails.
Welsh, gold ... ₩ ton, 48 00 @ 50 00
American, at works, currency ... " 52 00 @ 55 00
Old Rails, currency ... " 28 00 @ 30 00

Scrap.
Wrought Scrap ... "

Bar Iron from Store.
Common Iron.
¾ to 2 in. round and square ... ₩ ton, $ 65 00
⅝x9-16 in " " ... " 70 00
½ in. " " ... " 72 50
2½ to 3 in. " ... " 70 00
1 to 6 in. wide x ¾ and 1 in. thick ... " 65 00
1½ to 6 in wide x ¼ & 5-16 in. thick ... " 73 00
1 and 1½ in. x ¼ and 5-16 ... " 72 50
Swedish Iron.
1⅛x⅜ to ⅝ ... " 140 00
1¼ to 5x⅜ to ¾ and ½ to 1½ in. square ... " 135 00
6 to 7x⅜ and ½ ... " 145 00
Refined Iron.
¾ to 2 in. round and square ... " 67 50
1 to 6 in. wide x ⅜ to 1 thick ... " 67 50
1¼ to 6 in. wide x ¼ and 5-16 thick ... " 72 50
1 and 1½ x ¼ and 5-16 ... " 72 50
Large Rounds.
2¼ to 2½, round and square ... " 77 50
3, 3¼ and 3½ in. ... " 82 50
3¾ and 4 in. ... " 90 00
Rods—⅝ and 11-16, round and square ... " 70 00
½ and 9-16 ... " 72 50
7-16 ... " 80 00
⅜ ... " 85 00
5-16 ... " 90 00
¼ ... " 95 00
3-16 ... " 127 50

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20 ... ₩ lb	4½ @ 4¾c	5½c	5¾c
21 to 24	4¾ @ 5c	6c	6c
25 to 26	5c	6c	6c
27	5½c	6c	6¼c
28	5½c	6c	6½c

Galvanized, 1. to 20, prime, ₩ lb 10; 2d quality ... ₩ lb 9c
" 21 to 24 " " 11 " ... " 10c
" 25 to 26 " " 12 " ... " 11c
" 27 " " 13 " ... " 12c
" 28 " " 14 " ... " 13c
Patent Polished ... ₩ lb 15c
Russia, Nos. 8 to 16 ... " 17c
" Stained, No. 1 ... " 16c
Belgian ... " 12c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON

4½	5	5½	6	7 inch.
$4·50	3·50	4·50	5·25	6·50 per doz.

RUSSIA IRON.

4½	5	5½	6	7 inch.
$5·00	7·00	9·50	12·00	14·00 per doz.

BABBITT METAL.
Excelsior ... cash, dis 10 %
No ... 1, 2, 3, Extra.
10c, 12c, 15c, 20c @ 25c

COPPER.—DUTY. Pig, Bar and Ingot, 5c.; old copper, 4 cents ₩ lb; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem. All subject to a reduction of 10 per cent.
American Ingot ... ₩ lb 21½c
English ... "

SHEATHING, BRAZIERS COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot ... 38c ₩ lb
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot ... 35c. "
Braziers Copper, 12 oz. per square foot and lighter ... 39c. "
Circles less than 84 inch in diameter ... 35c ₩ lb
Circles, 84 inch diameter and over ... 39c. "
Segment and Pattern Sheets ... 35c. "
Locomotive Fire Box Sheets ... 38c. "
Sheathing Copper, over 12 oz. per sq. ft. ... 31c. "
" " 12 oz. ₩ sq. ft. and lighter ... 39c. "
Bolt Copper ... 33c. "
Copper Bottoms, 32 @ 33c. ₩ lb ... net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier ... 36c. By the case, c. ₩ lb
12 oz. and lighter ... 39c. " " 38c. "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier ... 38c. By the case, 37c. ₩ lb
(And all sizes not over 20 inches wide.)
30x60
14 and 16 oz. and heavier ... 40c. ₩ lb
12 oz. ... 43c. "

TINNING.
14x48, by the case ... 8c. ₩ sheet
14x48, less than case ... 10c. "
Boiler Sizes, 7 and 8 inch ... 12c. "
" 9 inch ... 15c. "
Other sizes not larger than 30x60 ... 2½c. ₩ sq.
Larger than 30x60 ... 3c. "

LEAD—DUTY Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb. All subject to a reduction of 10 per cent.
Spanish ... 6¾ @ 7c gold
German Refined ... 6½ @ 6¾c gold
English ... 6½ @ 7c gold
American ... 6⅝ to 6¾c gold
Bar ... dis 10 % ... 8¾c.
Pipe ... dis 10 % ... 8½c.
Tin Lined Pipe ... dis 10 % ... 16½c.
Sheet ... dis 10 % ... 8½c.
Shot ... dis 10 % Drop, 8¾c.; Buck, 9¼c.

SOLDER ... No. 1, 15c; No. 2, 13½ @ 14c

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2½ cents; over 7 cents, and not above 11, 3 cents per lb.; over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. All subject to a reduction of 10 per cent. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as Steel.

American Cast Steel.
Tool ... 15 @ 16c
Spring ... 10c
Homogeneous ... 12½c
Tire ... 12½ @ 13½c
Machinery (round and square) ... 10 @ 11c
File ... 11c
Sheet ... 14 @ 16c
Saw Plate, mill and mulay ... 14 @ 16½c
Saw Plate, gang and X cut ... 13 @ 14c
" circular as to size ... 18 @ 30c

Chrome Steel.
Tool ... ₩ lb 20 @ 21c
Tool, extra fine ... " 40 @ 75c
Spring ... ₩ lb 12c and upward
Machinery ... ₩ lb 14c.
Hammer ... " 15c.
Gun or Homogeneous ... " 16c

English Steel,—payable in gold, dis 5 % cash.
" Best Cast ... ₩ lb 18c
" Extra Cast ... " 19c
" Round Machinery, Cast ... " 11½c
" Swaged, Cast ... " 18c
" Best Double Shear ... " 18c
" Blister, 1st quality ... " 13½c
" " 2d quality ... " 11½c
" " 3d quality ... " 10½c
German Steel, Best ... " 11½c
do 2d quality ... " 10½c
Sheet Cast Steel, 1st quality ... " 18c
" " 2d quality ... " 16c
" " 3d quality ... " 14c
File Steel, Flat and ½ Round ... " 12½c
" Square and Round ... " 13c
" Mill ... " 13½c
" Taper to 4 inch ... " 17c
" Taper 3 and 3½ inch ... " 18c

SPELTER—DUTY: In Pigs, Bars and Plates, $1 50 per 100 lbs.—less 10 per cent.
Silesian, cash ... 6¾ @ 7c., gold
American " ... 6¾ @ 11c., currency

TIN—DUTY: Plates, Sheets, Tagger and Terne, 15 per cent. ad val.; Electro-galvanized Plates, 2 cents per lb; Manufactures of, not enumerated, 35 per cent. ad val.—all subject to a reduction of 10 per cent. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca ... ₩ lb 25 @ 25½c., gold
Straits ... ₩ lb 21¾ @ 22½c., gold
English ... ₩ lb 21¾ @ 22c., gold

CHARCOAL TIN PLATE.
I C 10x14, Prime Charcoal ... 10·75 to 11·00
12x12, " ... 11·50
14x20, " ... 11·75
I X 10x14, " ... 13·25
12x12, " ... 13·75
14x20, " ... 14·25
D C 12¼x17 " ... 10·50
D X 12¼x17 " ... 12·75
For each additional X add ... 2·25

COKE TIN PLATE.

	Best	2d Quality.	Ordinary.
I C 10x14	$10·25 @ 10·75	9·50 @ 10·00	9·00 @ 9·50
I C 12x12	10·75	10·50	
I C 14x20	11·25	10·50	

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$10·00	9·25 @ 9·75	7·75 @ 9·50
I X 14x20	12·25		
I C 20x28	20·00 @ 21·00	19·00 @ 19·75	16·50 @ 18·00
I X 20x28	26·00		
I C 20x200 ft.	24·00		

ZINC.—DUTY: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ₩ lb. All subject to a reduction of 10 per cent.
Sheet ... cask 9¾c
" ... open 10c

Paper Stock, Old Metals, &c.

(Dealers' Selling Prices.)
Canvas linen ... 6¾ @
" cotton, No. 1 ... 6¾ @ 7
" " No. 2 ... @ 5
White linen rags, No. 1 ... 6 @ 6½
" " No. 2 ... 4½ @
Colored ... 2½ @
Mixed woolens ... @ 2½
Soft woolens ... @ 5½
Gunny bagging ... 1¾ @ 2
Jute Butts ... 2½ @ 2¾
Kentucky bagging ... 5¼ @ 5½
Book stock ... 4 @ 4½
Waste paper and scraps ... 1 @ 1½
Rope cuttings ... 1½ @ 3
Kentucky Bale rope ... 4 @ 4½
Oakum junk, No. 1 ... 5½ @ 5¾
" No. 2 ... @ 4
Grass rope ... 3½ @ 4
Tarred Shaking ... 1½ @
White Collar Cuttings, all paper ... 7 @
" " " muslin lined ... 5 @
" Envelope " ... 7 @
Hard White Shavings, No. 1 ... 6½ @
Soft " " No. 1 ... 6 @
White Shavings, No. 2 ... 5½ @ 6
Mixed Shavings, part white ... 4 @ 4½
Imperfections, No. 2, best folded sheets ... 5 @
" " 1, Heavy Stock ... 4¾ @ 5
Book Stock, Mixed ... 3½ @ 4
" " No. 2, light ... 2 @ 2½
Prints ... 1½ @ 2
Pure Manilas ... 2
Bogus Manilas and Hardwares ... 1 @ 1½
Commons ... 1 @
Binders' Board Cuttings ... 1¼ @ 2
Straw Board Cuttings ... 1¼ @ 1½

Old Metal.
Copper ... @ 20
Yellow metal ... 14 @ 15
Brass ... 13 @ 14
Heavy Composition ... 17 @ 18
Old lead, solid ... 5¾ @ 6¼
Tea lead ... 4½
Wrought iron ... 1½ @ 1¾
Sheet iron ... 0¾ @
Cast iron ... 1 @ 1¼
Machinery iron ... 1¼ @
Zinc ... 1
Pewter, No. 1 ... 17
" No. 2 ... 10 @ 12
Spelter ... 5½ @ 6

Paints, Oils, etc.

Paints.
Black, lamp—Coach Painters ... ₩ lb 20c
" " Ordinary ... 6c
" Ivory Drop, fair ... 15c
" " best ... 26c
Black Paint, in oil ... kegs, 8c.; ass't'd cans, 11c
Blue, Prussian, fair to best ... 50 @ 75c
" " " " in oil ... 35 @ 65c
" Chinese, dry ... 88c
" Ultamarine ... 25 @ 30c
Brown, Spanish ... 1½c
" Van Dyke ... 9c
Carmine, 40 ... $12 00
Green, Chrome ... 15 @ 23c
" " in oil ... 18 @ 25c
" Paris ... good, 30c; best, 40c
" " in oil ... " 30c " 40c
Mineral Paints ... 1½ @ 4c
Orange Mineral ... 14½c
Red Lead, American ... 9½c
" " English ... 10½c
" Venetian (N. C.) dry ... 2½c
" " in oil ... ass't'd cans, 11c; kegs, 8½c
" Indian, dry ... 10c
Rose Pink ... 13c
Sienna American, Raw ... 4c
" Burnt ... 4½c
" " in oil ... 16 @ 26c
" Raw " ... 15 @ 25c
Umber, Burnt ... 4 @ 8c
" " in oil ... 16 @ 21c
" Raw ... 3½ @ 7½c
" " in oil ... 18 @ 23c
Vermillion, Chinese ...
" English ... 1 9c
" Trieste ... 1 65
" American, Common ... 23c
White Lead, American, pure dry ... 10½c
" " " in oil ... 11½c
White, Paris, English, prime ... in bbls. 2½ @ 2¾c
Yellow Ochre, French ... 2½ @ 2¾c
" " " in oil ... ass't'd cans, 11c; kegs, 8½c
" " Vermont ... in casks 1½c
" Chrome ... 17 @ 27c
" " in oil ... 18 @ 28c
Zinc White, American No. 1 dry ... 9c
" " 1, in oil ... 11c
" French (Paris) ... 11 c
" " in oil ... 12 c

Oils.
Linseed Raw ... ₩ gal. casks, 79c. bbls. 80c
" Boiled ... " 84c. " 85c
Whale, Crude ... "
" Bleached Winter ... "
Sperm, Crude ... " 1·60
" Winter unbleached ... " 1·85
" " Bleached ... " 1·90
Seal, Extra Refined ... "
Lard, Pure Winter ... "
" Spring ... " 1·00
Cotton Seed, Crude ... " 60c
" Southern Yellow ... " 65c
" White ... "
Neatsfoot, Winter ... 70c @ $1·10
Natural Lubricating ... 28c @ 40c

Sundries.
Asphaltum ... 9c
Benzine ... ₩ gal. 16c
Chalk ... 1½c
" Block ...
Dryer, Patent, Am'n ... ass't cans, 10½c.; kegs 9c
" " English ... " 11c.; " 9c
Flocks ...
Frostings ... 50c
Glue, White ... 33 @ 47c
" Sheet ... 20c
Glaziers' Points, Zinc ... 9c
Gum, Copal ... 30c
" Damar ... 28c
" Shellac, English ... 75c
" " " dark ... 70c
Litharge ... 10c
Pumice Stone, selected Lumps ... 4 @ 6c
" " powdered ... 4c
Putty in bladders ... 3½c
" in bulk ... 3c
Rotton Stone, soft, English ... 8c
Spirits Turpentine ... 38c
Whiting, Spanish ... 1c

Glass.
French Window—1st, 2d, 3d, and 4th qualities. Per box of 50 feet.

SINGLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$10·25	$9·25	$8·75	$8·00
11 x 14 to 16 x 24	12·00	11·00	10·00	9·50
18 x 22 to 20 x 30	15·00	13·50	12·00	10·50
15 x 36 to 24 x 30	17·50	15·25	12·50	
26 x 28 to 24 x 36	18·25	16·00	13·25	
26 x 36 to 26 x 44	20·00	18·00	14·50	
26 x 46 to 30 x 50	21·00	19·00	15·25	
30 x 52 to 30 x 54	22·50	20·25	16·25	
30 x 56 to 34 x 56	24·50	21·75	19·00	
34 x 58 to 34 x 60	26·00	24·50	21·50	
36 x 60 to 40 x 60	30·20	27·00	24·50	

DOUBLE.

SIZES.	I.	II.	III.	IV.
6 x 8 to 10 x 15	$16·50	$15·00	$14·00	$12·00
11 x 14 to 16 x 24	19·25	17·75	16·00	15·25
18 x 22 to 20 x 30	24·00	21·75	19·25	
15 x 36 to 24 x 30	28·00	24·50	20·00	
26 x 28 to 24 x 36	29·25	25·75	21·25	
26 x 36 to 26 x 44	32·00	29·00	23·25	
26 x 46 to 30 x 50	33·75	30·50	24·50	
30 x 52 to 30 x 54	36·00	32·50	26·00	
30 x 56 to 34 x 56	39·25	35·00	30·50	
34 x 58 to 34 x 60	41·75	39·25	34·15	
36 x 60 to 40 x 60	49·00	43·25	39·25	

Sizes above—$12·00 per box extra for every 5 inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 80 united inches, will be charged in the 84 united inches bracket.
Discounts 60&5 %.

Grindstones, Emery, &c.

Walter R. Wood,

GRINDSTONES

283 FRONT STREET,

NEW YORK.

Grindstones.

AMHERST,
INDEPENDENCE,
LAKE HURON,
AND BEREA.

Also Scythe Stones.

WORTHINGTON & SONS, Mfrs.,
North Amherst, Ohio.

EMERY WHEELS AND MACHINERY

Upon which to run the same, of all kinds.

EMERY Emery Cloth, Mill Stone CEMENT. TRADE MARK. DIAMOND Tools, Oil Stones,

Soapstone Register Borders.

For particulars, address,

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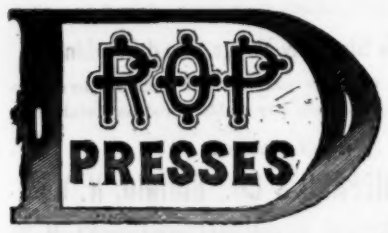
6 Exchange and 26 Devonshire Streets, Boston, Mass.

THE LEHIGH VALLEY
Emery Wheel Co.,
Weissport, Penn.
Manufacturers of
"LEHIGH" Emery
Wheels and Machines.
Send for Circulars.

THE
Rocky Mountain Vermilion Paint

is "Nature's Compound" of Copper, Mercury, Lead and Iron. A pure Oxide of Metals, containing no earthy matter, hence we claim and are prepared to *prove* that it is the Best and Cheapest Paint in the market. Properly mixed, we will guarantee it to cover double the surface and wear twice as long as ordinary paints. It will not Peel, Scale, Crack or Blister, though subjected to high degrees of heat. It will effectually Prevent the Corrosion of Metals, even in mid ocean. Warranted superior to red lead or any other lead, for any and all purposes for which paint is required. Please send for circulars.

All orders should be addressed, **Wm. H. Corey**, General Agent, 20 Sabin St., Providence, R. I.



Bennett Hotchkiss and N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of BENNETT HOTCHKISS (who in an interference case with Goulding and Cheney was declared the first inventor) and N. C. STILES. Our improvements consist:

First.—Of an arrangement of parts that makes it the most complete Jobbing Hammer, and will take the place, to a great extent, of all other kinds for forging. In addition to the upright rod, which is operated by the hammer to open and close the rolls, we place another rod the lower end of which is secured to the end of a lever which is operated by the hand or foot, which operation also opens and closes the rolls at will. The lower end of this rod has a slot, so that the action of the hammer will not disturb the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer. The belt or board passes up between two clamps situated under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold up the hammer. To let the hammer fall the clamps are opened by pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back roll is made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable collar on the upright rod allows the operator to obtain *any hight* of blow desired automatically. If one blow is wanted, press upon the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blows will be repeated until the pressure is removed. If a blow of less hight than the collar is set for is required, work the hand lever, which will give you any hight of blow desired. The hammer can be held up at any point below the collar by bringing the hand lever into action when the hammer is at the desired hight, so that the next blow can be given from a state of rest, of less hight than the collar is set for. This is a feature no other drop has; that is, the first blow struck can be of less hight than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the board from touching either roll and prevents the same from being worn uneven.

Manufactured only by the

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L. COES'

Genuine Improved Patent

SCREW WRENCHES.

Manufactured by

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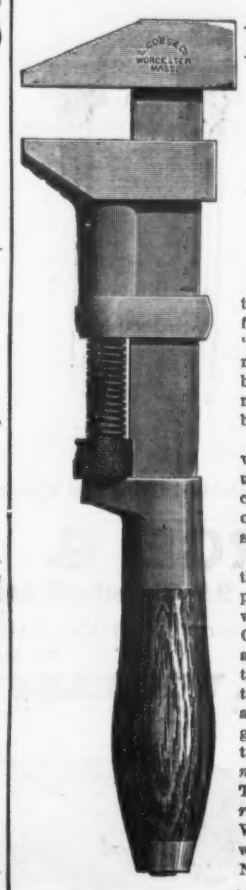

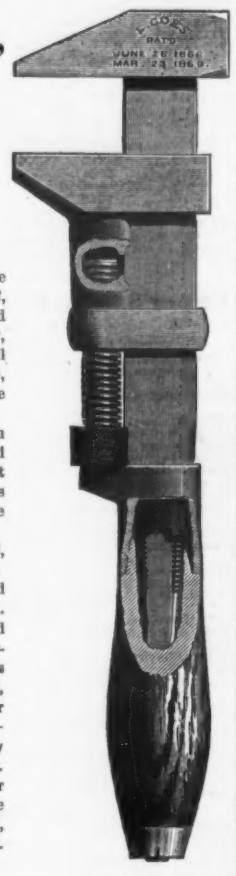

Established in 1839.

Registered March 31, 1874.

We invite the particular attention of the trade to our New Straight Bar Wrench, *widened*, full size of the larger part of the so called "reinforced or jog bar." Also our enlarged jaw, made with ribs on the inside, having a full bearing on the front of bar (see sectional view), making the jaw fully equal to *any* strain the bar may be subjected to.

These recent improvements in combination with the nut inside the ferrule firmly screwed up flush, against square, solid bearings (that cannot be forced out of place by use), verifies our claim that we are manufacturing the strongest Wrench in the market.

We would also call attention to the *fact*, that in 1868 we made several *important* improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes, which were *at once closely* imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon *our* improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be *good* evidence that we manufacture a superior Wrench, we wish the trade *may not be deceived* on the question of *originality*. Trusting the trade will fully appreciate our *recent* efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped

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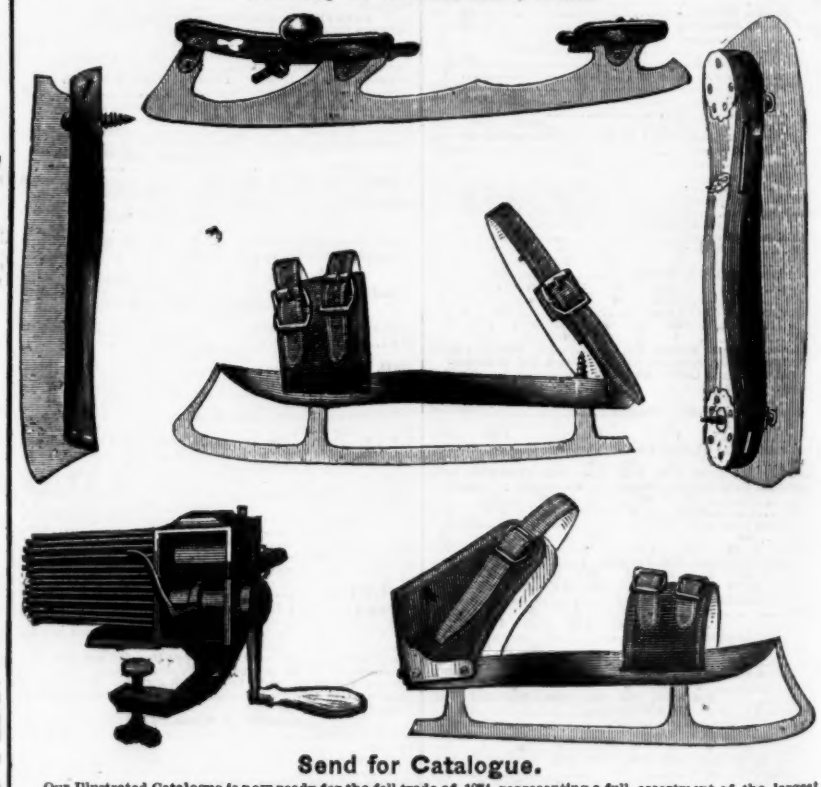

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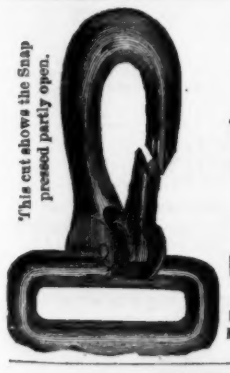

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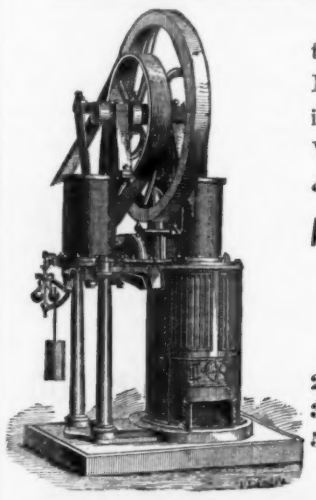

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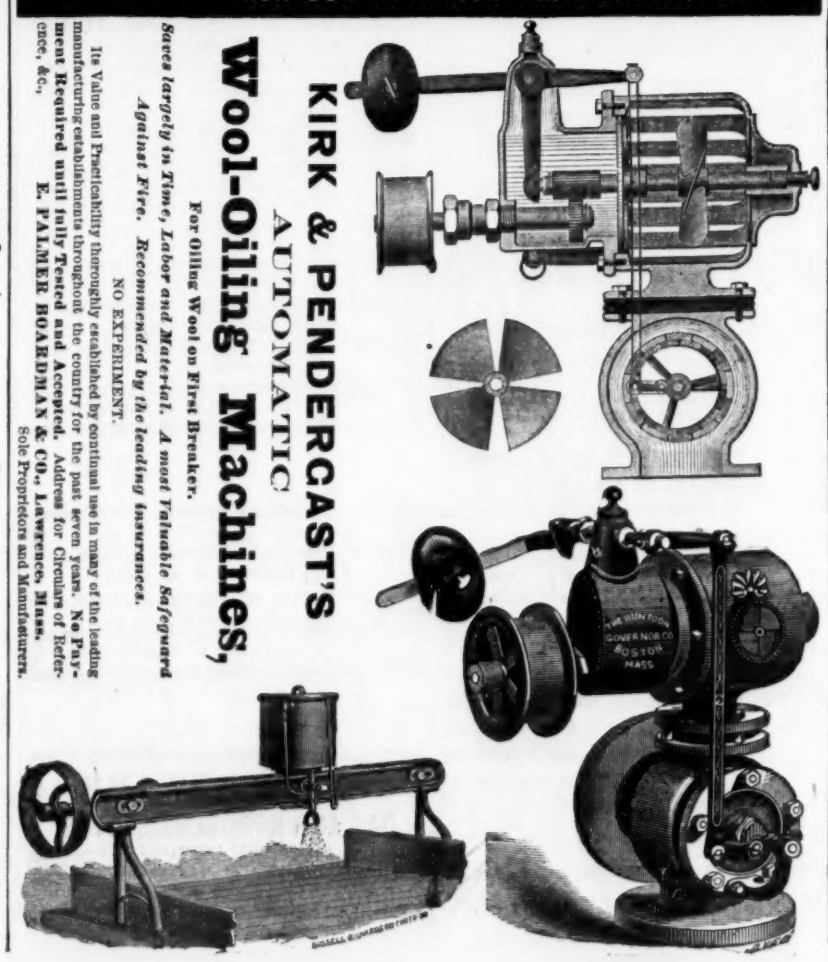

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Fig. 1.

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Fig. 1 shows it as applied to a pair of pencils, and Fig. 2 represents a steel point, connected with a spring socket, which may be slipped over the point of either of the pencils thus forming a pair of steel pointed dividers.

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Fig.

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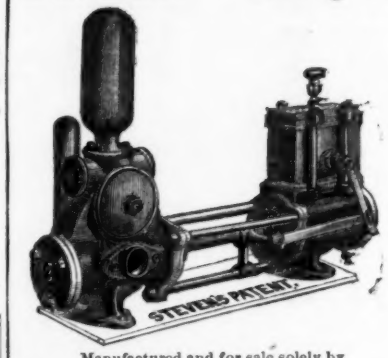

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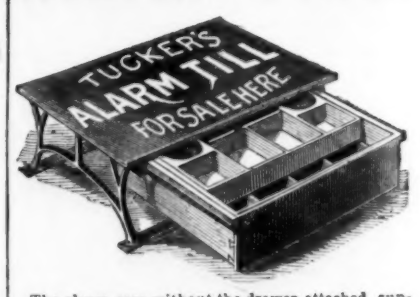

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₱ doz.....	$10 00	10 50	12 00	13 00	15 00	18 00	} dis 15 %
No.....	9	9½	10	10½	11	11½	
₱ doz.....	$13 00		18 00		22 00		} dis 15 %
No.....	12		12½		13	13½	

Trunk Locks.....dis 5 @ 10 %
Thumb and Boggens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates .....dis 60 @ 60&10 %
Lincoln's " .....dis 40 @ 40&10 %
Landers, Frary & Clark's Petroleum...dis 10 @ 10&10 %
Taylor's Petroleum Faucets .....dis 20 @ 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 10 %
Woodruff.....dis 10 %
Stowe.....dis 10 %
Hale's.....dis 25 %
Stuffers.....dis 10 %
Planes.—Auburn Tool Co., "Bench ".. dis 35 @ 35&5 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plane Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Plumbs and Levels.
Stanley Rule and Level Co.....dis 60&10 %
Wm. Johnson. (Stanley List).....dis 60&10 %
Rakes.—Cast Steel Garden.....dis 33½ %
Malleable Garden.....dis 33½ %
Wood Head Iron Teeth.....dis 30 @ 40 %
Rules.—All Maker's Boxwood...dis 60&10 @ 60, 10&10 %
All Makers Ivory.....dis 50 %
Steelyards.—American Pattern.....dis 15 %

₱ doz.....	$5 50	7 00	9 00	10 00	11 00	12 00
No.....	50	100	150	200	250	300

English Pattern.....dis 15 %

₱ doz.....	$7 00	8 67	10 67	12 67	14 67	16 67
No.....	50	100	150	200	250	300

L. F. & C. Excelsior.....dis 10 %

₱ doz.....	$8 00	10 00	12 00	15 00	18 00	21 00
No.....	50	100	150	200	250	300

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz. $11 00 net
Clipper No. 10, Boxed and Sharpened.....₱ doz $10 50
" 5, " " " 10 00
Common Scythes.....₱ doz $7 00 @ 10 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 12½ %
Disston's Hand.....dis 12½ %
W. McNiece's H'd. Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list.....dis 30 %
Shovels and Spades.
Rowland's Plain Back, list Sept. 1st.....dis 30 %
" Back Strap " .....dis 30 %
Oliver Ames & Sons.....new list dis 12½ %
Brady Shovel Co.....dis 12½&5 %
Sad Irons.—Richmond (polished face), per lb. 4 c. net
Richmond (polished face)... by the cask ₱ ℔ 3½c. net
Stone.—Arkansas Oil, No. 1..... ₱ ℔ $1 75
Turkey Oil, No. 1..... " 1 00
Washita Extra..... " 30c
" No. 1..... " 22c
" " 2..... " 18c
" " " 5½c
Screws.—Iron.....new list, Jan. 1st, 1874, dis 52½ %
Brass.....dis 51½ %
Spoons.
Plated.....dis 40&5 %
Britannia.....dis 40&10 %
German Silver.....dis 20 %
" Light.....new list dis 15&5 %
Lalance & Grosjean Iron.....dis 10 %
Springs.—Gray's Door.....dis 40 %
Terry's Door.....dis 40 %
Stocks and Dies......dis 15 %
Stove Polish.—Gem.....₱ gross, $5 00
Onyx..... " $5 00
Try Squares.—Winterbottom..... dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 30&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 72½ %
" " by the case...dis 72½&7½ %
Clout and Finishing Nails.....7½ %
" " by the case.....dis 7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " " .....dis 30 %
Vises.—Solid Box.....₱ ℔ net 15c
Wrenches.—Coes Genuine.....dis 10 %
Coes Imitation Wrought Bar.....dis 50 %
" " Malleable Bar.....dis 60 %
" " (Kellogg) Malleable Bar....dis 50 @ 10 %
Tufts Pattern (Wrought Bar) .....65 %
" " Kellogg's (Nail Bar).....dis 65&10 %
Philadelphia Tool Co.'s Pat. Duplex.....dis 25 %
" " Improved Baxter.....dis 25 %
" " " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....dis 40 %
No. 19 to 26.....dis 45 %
No. 27 to 36.....dis 45 @ 47½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 20 %
Galvanized Wire No. 0 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.

Sept. 12, 1874.

Augers—Snell Mfg. Co.....dis 20 %
Bits, Auger—Snell Mfg. Co.....dis 20 %
Bells, Cow—Kaws Genuine.....dis 30 %
Bolts—Carriage and Tire.....dis 75&10 %
Braces—Bit, Spofford's Patent.....dis 40&5 %
Brads, Cut.....dis 50&7½ %
Boards—Stove, Brooks' Patent.....dis 30 %
Butts—Brass.....dis 25 %
Wrought Narrow.....dis 30 %
" Broad, Loose Joint.....dis 35 %
" Table and Back Flaps.....dis 30 %
Wrought Butts, Loose Pin.....dis 35 %
Belting—Rubber.....dis 30 @ 35 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1 50
" Rutherford ".....$1 00
Chalk—White, Carpenter s .....₱ gross, 50c
Red, Carpenter's " 75c
Blue, " " 90c
Chisels—Firmer Socket.....dis 60&10 %
Framing Socket.....dis 60&10 %
Corner Socket Chisels.....dis 60&10 %
Slick's Carpenters'.....dis 60&10 %
Castings—Malleable .....₱ ℔ 10c
Clothes Wringers, " Novelty " No. 2.....₱ doz $36 00
Elbows—Corrugated..... 5 5½ 6 7
Charcoal.....$3 50 4 50 5 25 6 50 } dis 10 %
Russia..... 7 00 9 50 12 00 14 00 }
Files—Maischoss Bros.....dis 50 %
Freezers Ice Cream—" Champion .....dis 33½ %
Hammers—Henry W. Kip's.....dis 7½ %
Hinges—Window Blind—
Clark's.....dis 50&10 %
Shepard's and Standard.....dis 55&10 %
Wrought Strap and T.....dis 40&10 %
Hods, Coal—Plain, Black and Galvanized.....dis 10 %
Funnel, Black and Galvanized.....dis 10 %
Fancy and Helmet.....dis 10 %
Palace Coal Vases.....dis 10 %
Hooks and Staples—Wrought.....dis 60&10 %
Hooks—Belt .....dis 50&10 %
Hasps and Staples—Wrought.....dis 60&10 %
Sad Irons.....4c
Kettles—Brass..... ₱ ℔ 50c
Enameled.....dis 50&5 %
Knives, Drawing—Oval No. 1.....dis 60&10 %
Razor Blade.....dis 50&10 %
Lanterns "Peerless,".....No. 1 5 10
₱ doz $26 00 $10 50 $13 75 dis 10 %
Tuouiar.....
" with Guards.....
Machines—Apple Paring, "Turn Table".....8 00 ₱ doz
Mills, Coffee—Box and Slide, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American .....dis 20 %
Nails—Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %
Horse, Ausable.....No. 5 7 8 9 10
30 27 25 24 23 22c
" " Finished & Pointed.....add 1c ₱ ℔
" " 1000 lbs.....dis 5 %
" Clinton.....No. 6 7 8 9 10
22 20 19 18 17c
Packing—Rubber.....dis 30 @ 35 %
Pencils, Slate—Soapstone.....4 5 6in.
30 40 50c. ₱ 100
Case lots.....dis 20 %
Paint—White Lead, U. S. Gov't.....₱ ℔ 9 c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Rope—Manila, ½ inch and larger.....₱ ℔ 15½c
Screws—"American Screw Co"—
Flat Head, Iron.....dis 52½ %
Flat Head, Brass.....dis 52½ %
Staples—Blind, Boardman s Pat., ½ & ⅝.....₱ ℔ 21c
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....dis 40&10 %
Britannia.....dis 45&10 %
Squares—Steel and Iron.....new list 50 %
Shoes, Horse—H. Burden & Sons.....₱ keg $6 00
Saws—Henry Disston & Sons.....dis 10 %
Scales—Buffalo Scale Works.....dis 25 %
Fairbanks.....dis 15 %
Traps, Steel—Newhouse.....dis 20 %
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Vises—Parallel, Buffalo.....dis 20 %
Ware—French, Tinned and Iron.....dis 25 %
Stamped and Japanned.....dis 10 %
Cast Iron Hollow.....dis 33½ %
Tin Plates.—Add for each X..... 2 50
10x14, IC, Charcoal...$11 25 | 14x20 IC, terne.....$10 25
12x12, " ... 11 75 | 20x28 IC, " 21 50
12½x17, " ... 16 75 | 20x28 IX, " 26 00
14x20, " ... 12 25 |
Pig Tin—Straits.....28c @ 29c
Bar Tin.....30c
Solder.....No. 1, 15c ; No. 2, 14c
Sheet Zinc—
"Lasalle".....570 100 ℔ casks
$10 00 10 30 ₱ 100 ℔s
Sheets.....$10 00
Iron Wire—Bright and Annealed.....dis 40 %
Coppered.....dis 35 %
Tinned.....dis 15 %
Tinned Broom, { Nos. 20 21 22 } dis 20 %
{ 20c 21c 21c }
Copper—Sheathing 14 @ 18 oz..... ₱ ℔ 33c
Planished..... ₱ ℔
Bottoms..... ₱ ℔ 33c
Bolts..... ₱ ℔ 35c
Braziers' Sheets..... ₱ ℔ 35c
Sheet Iron.—
18 Common.....$4 95
24 Common.....5 25
24 W. D. Wood & Co., Smooth Finish.....5 90
Am. Russia..... A. B.
15c 12c
Gen. Russia, No. 1 stained.....18c
" " clean.....19c
Galvanized.....dis 15 %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.

Tin Plate.—I. C. 10x14 Charcoal.....$11 50 @ 12 00
I. X. 10x14 Charcoal..... 14 50 @ 15 00
I. C. Terne 14x20. ..... 10 00 @ 12 25
I. C. Terne 20x28..... 21 50 @ 23 50
I. C. Continuous..... 24 00
Block Tin.—
Pig.....₱ ℔ 27c @ 29c | Bars.....₱ ℔ 31c
Solder.— | A 1..... ₱ ℔ 19c
S. & Co.....₱ ℔ 23c | Rooing ..... " 17c
Lead.—Pig.....₱ ℔ 7½c. | Bar.....₱ ℔ 8½c
Copper.—
Ingot.....₱ ℔ @ 24c | Sheets, 6 to 9 lb...₱ ℔ 41c
Planished... " @ 50c | " 10 to 12 oz... " 38c
Sheathing.. " @ 33c | Braziers 18 lb..... " 35c
Copper Drops @ 30c | Copper Bottoms.. " 33c
Zinc. Cask, 500 to 1000 lbs.....₱ ℔ 10 c
Case, 100 lbs..... " 11 c
Slab..... " 7½c
Brass.— | Roll, No. 38 to 40... ₱ ℔ 50c
Roll, No. 6 to 30. ₱ ℔ 38c | Wire, No. 0 to 20... ₱ ℔ 40c
" 30 to 38. " 42c | " 20 to 25... " 45c
Babbit Metal.— | Aliens'..... ₱ ℔ 20c
Sellew & Co.....₱ ℔ 35c | Market..... " 12c
Antimony..... ₱ ℔ 17c
Bismuth..... ₱ ℔ $4 00
Nickel..... ₱ ℔ $3 50
Sheet Iron.— | Planished A.....₱ ℔ 15c
Gen. Russia.....₱ ℔ 20c | " B..... " 12½c

	Com. B.	Smooth Fin.	S. L. U.	Smooth D	Re'fd.
15 to 20	4·4c	6·0c		8·0c	
22 to 24	4·6c	6·1c		8·1c	
26	4·8c	6·3c		8·3c	
27	5·0c	6·5c		8·5c	

Galvanized Iron.—Full bundles..... ...dis 20 %
Nos. 18 to 20..... ....12c | No. 26..... .....14c
22 to 24..... ....13c | 27..... .....15c
Bar Steel.—Silver, ₱ ℔ 16c ; Crescent, 21c.
Iron Wire.....dis 33 %
Enameled Ware.....dis 45 %
One Piece Corrugated Elbows.....dis 10 %

Charcoal Iron.		Russia Iron.	
4¼ inch.....	₱ doz $2 50	4½ inch.....	₱ doz $5 00
5 "	" 3 50	5 "	" 7 00
5½ "	" 4 50	5½ "	" 9 50
6 "	" 5 25	6 "	" 12 00
7 "	" 6 50	7 "	" 14 00

Leader Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

	₱ doz.		₱ doz
2-inch	$1 75	2½-inch	$2 75
3-inch	2 25	3½-inch	3 25
4-inch	2 50	4½-inch	3 50

Sheet Iron Bread Pans.....₱ ℔ 11c
American Broilers.....₱ doz. $13 50
Tinmen's Machines..... dis 5 %
Sad Irons..... ₱ ℔, 3½c @ 4½c
Brass Kettles.—Ansonia..... 50 %
Dog Irons..... 30c

PITTSBURGH.

The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent. Iron, standard list assorted sizes, for large orders, c. card rate, 2 % off net.
Flat Rail (1½x¼), punched and coun'sunk..4·4c ₱ ℔ net
Iron Wedges.....4½c ₱ ℔ net
Norway Nail Rods.....9¼c ₱ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point).....5c ₱ ℔ net
Beetle Rings.....8½c ₱ ℔ net
Fence Pickets—
⅝ round, bent to shape, 30c ₱ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts (new list).....70&10 % off net
Plow Bolts.....50, 10&5 % off net
Stove Bolts.....15 % off net
Machine and Square Head Bolts.....50&10 % off net
Coach and Lag Screws.....50&10 % off net
Bolt Ends.....35 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ⅝ in.....7½c ₱ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in.....6 c ₱ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ⅝ in.....9 c ₱ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1⅝ in.....7 c ₱ ℔ off net
Nuts and Washers in 25 lb. boxes, 1c ₱ ℔ ex. Nuts and Washers in 5 lb. boxes, 1½c. ₱ ℔ ex.
Harrow Teeth, in lots of 1 ton or more, packed in casks, 1 in. diam. 3½c ₱ ℔ net ; ⅞ & ¾ in. diam. 3½c ₱ ℔ net ; ⅝ in. diam. 4c ₱ ℔ net.
Patent Headed Harrow Teeth, packed in casks, 3½c ₱ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 5½c ₱ ℔ net ; ¾ in. diam. 6½c ₱ ℔ net ; ⅞ in. diam. 7½c ₱ ℔ net. 1c ₱ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook-and-Eye Hinges, ⅜ to 1 in. diam. 9c ₱ ℔ net; ⅝ in. diam. 10c ₱ ℔ net; ½ in. diam. 12 c ₱ ℔ net.
Screw and Strap Hinges, in lots of 100 pairs or more, 14 to 36 in. long, 5½c ₱ ℔ net ; 8, 10 & 12 in. long, 6½c ₱ ℔ net
Strap and T Hinges.....20 & 10 % off net, delivery as customary.
For purchases amounting to $250 between May 20th and December 31st, 5 % extra off.
Screw Hitching Rings.....$5 25 ₱ 100 net
Duck Nest Tuyere Irons.....$14 50 ₱ doz net
Cast Iron Washers..... ₱ ℔ 4c net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long..... ₱ ℔ 4 c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 4½c net
1 to 2 in. diam. from 1½ to 4 ft. long..... " 4½c net
⅞, ¾ and ⅝ in. diam. over 4 ft. long..... " 4¾c net
⅞, ¾ and ⅝ in. diam. from 1½ to 4 ft. long " 5½c net
Bridge bolts with upset ends..... ⅞c. ₱ ℔ extra
Wrought iron plates, punched..... 5c. ₱ ℔ net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End,				₱ set of	8 bolts..	55c
12	"	⅜	"	"	8 " ..	70c
10	"	9-16	"	"	8 " ..	} 90c
12	"	9-16	"	"	8 " ..	
14	"	9-16	"	"	8 " ..	$1 00
10	"	⅝	"	"	8 " ..	} 1 00
12	"	⅝	"	"	8 " ..	
14	"	⅝	"	"	8 " ..	1 10
16	"	⅝	"	"	8 " ..	1 20

5c ₱ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wagon Box Rods, narrow track, each.....18c
" " wide track, each.....20c
Single Tree Irons, ₱ set of four pieces.....38c
Wrought Iron Bolster Plates, 2¾ in. wide, ₱ set.....60c
" " 3 " " 65c
" " 3¼ " " 70c
" " 3½ " " 75c
Wagon Brake Ratchets, each.....16½c
" " " finished with guard, each..45 c
Wrought Hammer Straps, heavy pattern, each.....16 c
" " " light " each.....13½c
" Rub Irons, each.....11 c
Stay Chain Hooks, each.....8 c
Double and Single Tree Clips, figure 1, each.....9 c
" " " " 2, each.....10 c
" " " " 3, each.....12 c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks and Clips, in lots of 50 sets.....dis 25 %
Wagon Box Staples, 1¾ to 2½ in. to clinch. ₱ 1000 $11 00 net
" " " Bevel Box Iron, to set on. ₱ 1000 7 50 net
Neck Yoke Eyes, each.....4½c net
" " " with ⅝ rings, each.....7½c net
King Bolts, ⅝, 1, 1⅛, and 1¼ in. diam..... ₱ ℔ 4½c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths..... " 8½c net
Wagon Rivets, 3-16 in. diam., all lengths..... " 9½c net
" & Nails, in 5 ℔ paper boxes.... ₱ ℔ 1c extra
" in 25 ℔ wood " .... ½c extra
Wagon and Hinge Nails, ¼ in..... ₱ ℔ 17 c net
" 5-16 in..... " 19 c net
Double Tree Plates..... " 8½c net
Coupling " ..... " 5½c net
Tongue " ..... " 9 c net
Neck Yoke Plates..... " 11 c net
Tongue Cap Iron, 1⅜, 2 & 2¼ in. wide, same price ₱ ℔ as Band Iron.
Wagon Chains, Stay Lock and Tongue, 5-16 in, ₱ ℔ 10½c net. ⅜ in., 11½c. net

DETROIT.

(Reported by Messrs. Jewett & Root.)

Tin Plate.—Best Charcoal
IC, 10x14.....$11 25
IX, 10x14..... 14 00
XX, 10x14..... 16 75
IC, 12x12..... 11 75
IX, 12x12..... 14 50
IC, 14x20..... 13 25
IX, 14x20..... 15 00
XX, 14x20..... 17 75
XXX, 14x20..... 20 50
XXXX, 14x20..... 23 25
DC, 100 Plate..... 10 25
DX " 14 50
DXX " 16 25
DXXX " 18 00
DXXX 100 Plate .. 21 75
IX, 14x14..... 23 25
IC, 10x14 W..... 10 75
IX, 10x14 W..... 13 50
Roofing Tin.—Best Char.
IC, Terne, 14x20.....$10 25
IX, " 14x20..... 13 00
IC, Terne, 20x28..... 21 50
IX, " 20x28..... 25 50
Coke Tin.—
IC, 10x14 Coke.....$9 50
IX, 10x14, Coke 12 25
IC, 14x20, " 10 50
Sheet Zinc.—
Any width.....11c
Copper.—
Sheathing.....32c
Copper Bottoms.....32c
Planished Copper.—
Sheathing, 14x48.....39c
Boiler Size, No. 7.....41c
" " No. 8. ...41c
" " No. 9 ....41c
Tinning ₱ sheet, 14x48 10c
" " No. 7 10c
" " " 8 11c
" " " 9 16c
Pig Tin.—
Large Pigs.....29c
Small Pigs.....30c
Bars.....30c
Solder.—No. 1..... 17c
No. 2..... 16c
Bright Wire...dis 30½ %
Sheet Iron.—
No. 18 Am. Com.....4 80
No. 24 Am. Com.....5 00
Russia, No. 9, 10, 11&12, 18¼c
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $6 10
" 21 to 24..... 6 80
" 25 & 26..... 6 50
" 21 to 24 Char'l.. 7 80
" 25 & 26 " .. 8 00

Steel.

THREE CLASS PRIZE MEDALS. CLASSES 1, 21, 23, Great Exhibition of Industry, LONDON, 1851

MEDAL OF HONOUR, SOCIETY OF ARTS & INDUSTRY, LONDON, 1856.

1st CLASS PRIZE MEDAL, CLASS 1st UNIVERSAL EXHIBITION OF INDUSTRY PARIS, 1855.

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SUCCESSORS TO

SAML. COCKER & SON,

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MANUFACTURERS OF

CAST, SHEER, SHEET, AND BLISTER STEEL, OF EVERY DESCRIPTION.
BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;
Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,
HACKLES, GILLS, CARD CLOTHING, CARD TEETH, HACKLE AND GILL PINS,
FISH HOOKS, NEEDLES. &c.

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AND IMPORTERS OF IRON

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CHICAGO, Crerar, Adams & Co.....NEW ORLEANS, Folger & Co.
CINCINNATI, Augustus Wessel.....SAN FRANCISCO, Huntington, Hopkins & Co.

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Cast Steel Hammers and Sledges. Also, "M. & G." Anvils and Vises.

WARRANTED CAST STEEL, especially adapted for DIES and TURNING TOOLS, DRILLS, COLD CHISELS, PUNCHES and all kinds of MACHINISTS' TOOLS.
Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.
Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.
English Spring and Plow Plate Steel. Also, manufacturer of

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And GENERAL MERCHANT.

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AND GENERAL MERCHANTS,

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Boston, 21 Oliver Street.
New Orleans, La., 111 Gravier St.

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LIMITED.

BARROW IN FURNESS,

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MANUFACTURERS OF

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STEEL

For Tools, Cutlery, Saws, Files, Augers, Gimblets, &c.; Sheet Cast Steel for SPRINGS AND STAMPING COLD;

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DOG BRAND FILES,

Unsurpassed, if equaled in quality.

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Warehouse, 82 John St., New York.

Established 1810

HENRY MOORE, Attorney.

Steel.

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(LIMITED)

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Sole Manufacturers of the CELEBRATED

CAST STEEL,

Warranted most SUPERIOR and UNSURPASSED for

TOOLS and GRANITE ROCK DRILLS.

A full assortment of this universally approved OLD BRAND of English Steel, and

ARMITAGE'S GENUINE MOUSEHOLE ANVILS,

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FRANCIS HOBSON & SON,

97 John Street, NEW YORK,

Sole Manufact'rs of "CHOICE" Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

JOHN HOGAN, Agent.

S. & C. WARDLOW,

MANUFACTURERS OF THE CELEBRATED

Cast and Double Shear STEEL,

In Bars, Sheets and Coils, for fine Pen and Pocket Cutlery, Table, Carving, Butcher and Shoe Knives, Turning Tools, Dies, Files, Clock or other Springs, Saws and Tools of every variety.

SHEFFIELD, ENGLAND.

Office of S. & C. WARDLOW, 95 John Street, New York.

In calling the attention of consumers of Steel in any of the parishes above enumerated, we would respectfully assure them of our ability to supply an article, that cannot be excelled in quality, temper, and adaptation in all respects to the various purposes for which it may be required. Half a century of practical experience in all departments of Steel manufacture, a long established reputation in England, and the Continent of Europe, and in the Eastern States principally of this Country, encourage us to solicit a universal trial of our Steel for the above or other purposes for which a first class material in quality, temper, and durability is needed

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G. SANDERSON & CO.,

Manufacturers of all descriptions of

STEEL.

Bailey Street and Broad Lane Steel Works, } SHEFFIELD, ENGLAND.

Particular attention is paid to quality and temper for

Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for Turning Tools, Taps, Dies, Drills, &c.

Hot and Cold Rolled Sheets for Clock Springs, Corset Clasps, Pens, &c.

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MANUFACTURERS OF

Bessemer Railway Steel,

MERCHANT BARS, TIRE AND SHAFTING,

Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.

D. G. GAUTIER & CO.,

MANUFACTURERS OF

Hammered and Rolled STEEL of every description

JERSEY CITY, NEW JERSEY.

DUDLEY G. GAUTIER. JOSIAH H. GAUTIER.

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MANUFACTURERS OF

CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN—FOR EVERY PURPOSE.

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AGENCIES,

Potter & Hoffman, Philadelphia, Pa.
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Kimbark Bros. & Co., Chicago, Ills.
Wood & Leggat, Hamilton, C. W.

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(Established in 1848.)

SINGER, NIMICK & CO.

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Manufacturers of Extra Quality Tool

CAST STEEL,

Patent Rolled

SAW PLATES,

All descriptions of Cast and German

Spring and Plow Steel

Elliptic and Side Springs, Seat Springs,

AXLES, STEEL TIRE,

Plow Wings, Shares, Cultivators,

Reaper Bars, ow Bars, &c., &c.

Warehouse, 88 Water and 100 First Streets.

ISAAC JENKS & SONS,

Minerva & Beaver Iron & Steel Works

Wolverhampton, England,

MANUFACTURERS OF

"Jenks" Spring Steel, Cast and Swedes Spring Steel,

TIRE, TOE CORK, SLEIGH SHOE, BLISTER & PLOW STEEL.

Also, Plow and other Iron.

VAN WART & McCOY, Agents,

43 Chambers St., New York.

A full assortment of "Jenks" Spring Steel in stock.

MILLER, BARR & PARKIN,

Crescent Steel Works,

PITTSBURGH, PA.

Manufacturers of all descript of

STEEL

EQUAL TO ANY IN THE MARKET.

Office.....339 Liberty St.,

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Gunpowder.

GUNPOWDER

DUPONT'S

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DUPONT'S GUNPOWDER MILLS,

ESTABLISHED IN 1801,

Have maintained their great reputation for 70 years. Manufacture the

Celebrated Eagle Ducking, Eagle Rifle, and Diamond Grain Powder.

Also, SPORTING, MINING, SHIPPING, AND BLASTING POWDER,

of all kinds and descriptions.

For sale in all parts of the country. Represented by

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LAFLIN & RAND POWDER CO.

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invite the attention of the the Hardware Trade to their facilities for delivering

BLASTING, MINING and RIFLE

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IN EVERY PART OF THE UNITED STATES from having agencies and magazines at all prominent points, beside our works at

Newburg, Saugerties, Kingston, and Catskill, N. Y.; Scranton, Carbondale and Pottsville, Pa.; Baltimore, Md., and Platteville, Wis.

The superiority is well known of our brands f Rifle Powder

Orange Rifle, Orange Ducking
Lightning, Audubon.

SAFETY-FUSE at wholesale.

CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)

Tin Plate.—

10x14, IC, Ch'l. Good.	$	14x20, IX, Ch'l Best.	$15 00
10x14, IC, " Best.	11 50	14x20, IXX, " "	17 50
10x14 IX, " "	14 00	14x20, IXXX, " "	20 00
12x12, IC. " "	12 00	DC, 100 Plate, " "	11 50
12x12, IX, " "	14 50	DX, " "	14 00
14x20, IC, " "	12 50	DXX, " "	16 50
		DXXX, " "	19 00

Roofing IC, Charcoal, Best..... 11 00
Roofing IX, Charcoal " 13 50
20x28, IC, Charcoal Roofing, Com 21 00
20x28, IC, " Good..... 23 50
20x28, IC, " Best 22 00
20x28, IX, " " 26 50
10x14, IC, Coke Plates..... 10 00 @ 10 50
14x20, IC, " ..... 10 50 @ 11 00
10x20, IC, ... 16 50

Block Tin.—
Large Pigs ..... 32c | Bars..... 30c
Small..... 29c | Straits, 2c. higher.

Zinc.—Sheet, 500 to 1000 lb. Casks..... 9¾c
Loose Sheets..... 10c
Slab Zinc or Spelter..... 6¼ to 7¼c

Copper.—Bottoms..... 33c
Sheathing..... 32c
Planished..... 36c
" Boiler lengths..... 40c
Ingot..... 24@ to 26c
Bolt 30c

Braziers' Sheets.—
30x60, 6 to 10 lbs.. ₩ ℔ 41c | 30x60, 15 to 100 lbs.. ₩ ℔ 35c
30x60, 10 & 12 lbs. " 38c

Solder.—F. S. & Co.'s make.
Best Fine..... 22c | Roofing..... 18c
No. 1..... 20c | Braziers' or Spelt. Solid.. 25c

Antimony...... 16c
Babbit Metal—F. S. & Co.'s..... 14c
No. 2..... 10c

Sheet Iron.—

	Common.	Smooth Com.	Smooth Charcoal.	Smooth Juniata.
No. 24.....	5 c	6 c	7¼c	9½c
25 & 26..	5½c	6¼c	7¾c	9¾c
27..	5¾c	6½c	8 c	10 c

Galvanized Iron...... dis 20 %
No. 15 to 20 ..... 12c | No. 24 ..... 15c
21 to 24 ..... 13c | 26 ..... 16c
25 & 26 ..... 14c

Russia Iron.—
Perfect..... 20c | No. 1 Stained..... 19c
In Sheets, 1c. higher.

American Russia.—
A ..... 15c | B..... 12c
In sheets, 1c higher.

Lead.—
Pig..... 7½c | Lead Pipe, in full coils .8¼c
Bar ..... 8½c | Lead Pipe, when cut. .8½c
Sheet Lead..... 8½c

Wire—Bright..... dis 35 %
Coppered..... dis 30 %

BOSTON.

(Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.)

Augers.—Watrous Ship..... dis 10 %
L'Hommedieu Ship..... dis 15 %
Axes.—Forester's Favorite, Bronzed..... $12 00
Blue Jackets, Blue..... 11 50
Excelsior, Black..... 11 00
Chopper's Pride, Bronzed..... 10 50
Red Cross, Red..... 10 00
Red Cross, Handled..... 12 50
Boy's Handled Blue Jackets..... 12 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2 50. B (No. 1) $2 00. C (No. 2) $1 50 ₩ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1..... $1 70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 26, No. 1..... 1 80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1..... 2 38
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 26, No. 1..... 2 50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1..... 3 38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 26, No. 1..... 3 50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1..... per pair, 70c.
Common, 6, No. 1..... " 60c.
Blind Hinges.—Washburn's..... per hundred set $9 50
Blind Pasts.—Washburn's..... per hundred set $5 75
Bolts.—Carriage, Phila.. "Girard Works.... dis 50&10 %
Borax.—Best Refined..... ₩ ℔ 14c
Borers.—Angle, Backus'..... dis 30 %
Boring Machines.—Angle..... each $4 75
Common, Snell's quality..... each 3 75
Braces.—Barber's..... dis 40&5 %
Backus'..... dis 50 %
Spofford's..... dis 40 %
Amison..... dis 45 %
Brass Faucets.—L. F. & C..... dis 25 %
Butts.—Union Drilled Loose Joint..... dis 60&10 %
" " Wire Fast Joint..... dis 55 %
" " Acorn Loose Joint.. dis 60&10 %
Brass Butts..... dis 30 %
Wrought Table Butts and Back Flaps..... dis 30 %
Wrought Narrow Butts..... dis 30 %
Can Openers—Sprague's..... dis 50 %
No. 1, Iron Handle..... $4 00
No. 2, Wood Handle..... 4 50
Cartridges.—" U. S. Cartridge Co."..... dis 50& 10 %
Chisels.—"Buck Bros.' Shank Goods.... add 20 @ 22½ %
Socket..... add 22½ @ 25 %
Coal Hods..... dis 35 %
Fancy Japanned, No. 4, 15 in., $8 00; 5, 16 in., $9 00; 6, 17 in., $10 00.
Fancy Galvanized, No. 4, 15 in., $11 50; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Perfection, Galv'd, No. 4, 15 in., $15 00; 5, 16 in., $16 00; 6, 17 in., $17 00.
Morning Glory, Jap'd, No. 4, 15 in., $12 00; 5, 16 in., $13 00; 6, 17 in., $14 00.
Morning Glory, Galv'd, No. 4, 15 in., $15 00; No. 5, 16 in., $16 00; No. 6, 17 in., $17 00.
Compasses and Dividers.—Bemis'..... dis 35 %
P. S. & W..... dis 25 %
Cordage.—Manila (usual trade dis.)..... ₩ ℔, 15c
American Tarred Hemp Lath Yarn..... ₩ ℔, 10c
Corn Hooks..... per doz $2 75
Cow Ties..... dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle.... $3 70
No. 35, " 3 " No. 6, " Snap..... 3 90
No. 40, " 3½ " No. 5, " Toggle 4 23
No. 45, " 3½ " No. 5, " Snap..... 4 40
No. 50, " 4 " No. 4, " Toggle 4 85
No. 55, " 4 " No. 4, " Snap..... 5 00
No. 60, " 4½ " No. 3, " Toggle 5 60
No. 65, " 4½ " No. 3, " Snap..... 5 80
Crow Bars.—Iron. Steel Points..... ₩ ℔, 5½c
"Sweet" Steel Bars..... ₩ ℔ 11c
Brown's Steel Bars..... ₩ ℔ 10c
K. P. & Co. Extra Drill Steel..... ₩ ℔ 15c
Dividers.—Cook's Nickel Plated..... dis 15 %
Door Springs.—Stimpson's Patent.—
No. 7, Light Inside doors, $12 00..... dis 25 %
No. 8, " outside " $18 00..... dis 25 %
Torrey's..... $4 00
Emery.—Alden..... ₩ ℔ 6½c
Wellington Mills..... ₩ ℔ 10c
Files.—Earl Smith & Co.'s English..... $5 to £ gold
American..... $5 to £ currency, less 12½ %
Nicholson..... $5 to £ currency, less 1.½ %
" Regular Taper..... dis 12½&5 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 62; 4, $1 88; 4½, $2 13; 5, $2 50.
Funnel Irons.—$2 50 2 50 2 50 3 25 per doz
5, 5½, 6, 7 inch.
Deep Flange.—$3 50 3 75 4 00
5, 5½, 6 inch.
Hammers.—Maydole..... dis 5 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $7 75
" " " " bell face, No. 1, $11; 1½, $9 75.
Hangers & Rollers.—Novelty..... dis 30 %
Anti-Friction..... $1 75 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co..... dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling..... 0, $4 75; 1, $5 25; 2, $5 75
Claw..... 1, 5 75; 2, 6 25
Lathing..... 1, 4 50
Axe Pattern..... 1, $7 00; 2, 7 50
Broad..... 0, $5 75; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75; 5, $12 75; 6, $14 75.
Hinges.—Strap and T, Stanley Works..... dis 25½ %
Plate, Loose and Fast Joint..... ₩ ℔ 7½c
Wrought Screw Hook..... ₩ ℔ 9c
Hoes.—Ely Balch & Co. M., B. & D.'s list, 1874.. dis 25 %
Remington, M., B. & D.'s list, 1874..... dis 30 %
Lanterns.—Tubular No. 0..... $9 50
Guarded. No. 78, (with kerosene oil and candle burners)..... 6 25
Lead.—Sheet and Pipe..... 9c—less 10 %
Locks.—P. & F. Corbin..... new list dis 45&5 %
Nashua..... dis 45&5 %
Manure Forks.—
Myers & Ervien, M., B. & D.'s list, 1874 ..... dis 25 %
Peck, Clark & Co., " " ..... dis 25 %
Shumway & Co., " " ..... dis 30 %
Mattocks.—K. P. & Co. axe finish, long cutter.. $13 75
Short cutter..... 13 50
Meat Cutters.—" Miles's" Challenge..... dis. 20 %
No. 1, $22 00; 2, $30 00; 3, $40 00.
Metal.—Babbitt, No. 1, 39c; 2, 25c; 3, 16c; 4, 15c ₩ ℔
Nails.—10d and larger..... unsettled
Nail Pullers.—Little Giant—Small..... per doz., $22 00
Little Giant—Large..... " 30 00
Padlocks.—Wilcox..... dis 50&2 %
All Brass, 2½ inch, 2 keys, job lot..... $9 00
Picks.—K. P. & Co., Polished Points—
5 to 6..... per doz $9 00; 6 to 7, $9 50
Pins.—Universal flat and Coat all wood—
2 in..... ₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
" Partridge," 6 square tine..... ₩ doz $12 00
Shumway & Co., 6 round tine..... ₩ doz 9 00
Pulley Blocks.—" Best Boston Make"..... net
Common Strapped Blocks—

	4	5	6	7 inch.
Single,	75c.	88c.	$1 00	$1 13 each.
Double,	$1 00	1 12	1 25	1 60 "

Inside Iron Strapped Blocks—

	6	6	7	8	10 inch.
Single,	$1 00	1 13	1 38	2 00	2 75 each.
Double,	1 88	2 50	2 62	3 63	4 00 5 00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

	5	6	7	8	9	10 inch.
Single,	$1 25	1 50	1 63	2 50	2 65	3 50 each.
Double,	2 50	3 00	3 38	4 63	5 00	6 50 "

Plated Ware.—Rogers bros..... new list dis 40&10 %
Plumb & Levels.—" Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels..... dis 50 %
No. 2, First Quality Levels..... dis 60&10 %
No. 3, Iron Pocket " ..... dis 35 %
No. 4, Level and Plumb Glasses..... dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge..... dis 50&10 %
No. 6, Improved Iron Bench Planes..... dis 20&10 %
Pocket Knives.—Conn. Cutlery Co..... new net list
American Shear Co..... dis 33½ %
Rakes.—Cast steel, garden..... dis 30 %
Malleable..... dis 25 %
Rail Barn Door.—For Novelty and Anti-Friction Hangers..... per foot 7c.. dis 30 %
Rivets.—Black..... dis 25 %
Carriage, oval head. Nos. 2, 3, 4, 5, 6, 7, 8,
13 13 14 14 15 16c ₩ ℔ net
Rubber Moldings.—" Harmon's"..... dis 10 %
No. 2, for Windows..... per foot, 5c
No. 3, for Doors..... per foot, 10c
No. 4, " ..... per foot, 12c
Sad Irons.—Bliss & Drake..... ₩ ℔ 4
Sand Paper—0 to 2, $4 25; 2 to 3, $4 75..... dis 10 %
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Disston's"..... dis. 15 %
Disston's..... dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts..... per ft., 37c
" " " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2 25
Boynton's genuine Lightning X Cut..... per ft., 60c
" " " One Man X Cut..each, $2 25
Circular—Wheeler, Madden & Clemson's..... dis. 25 %
Mill— " " " " ..... dis. 25 %
Screws.—American Screw Co..... revised list dis 50½ %
Scythe Stones.—
"Willoughby Lake," first quality..... ₩ gross $6 50
" second quality..... $4 00
Shovels.—O. Ames..... new list dis 12½ %
M. B. & D..... new list dis 12½ %
Snow, Malleable Iron Tip, D Handle—Agents for New England..... $6 50
Snow, Malleable Iron Tip, long Handle—Agents for New England..... 5 50
Sifters.—Coal, Rice, &c..... $12 00
Spading Forks.—M. & F..... dis 25 %
Stone Pickers.—" Partridge," original.. ₩ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's..$40 00 per doz
Traps.—Oneida..... dis 20&5 %
Blake's..... dis 50 %
Vises.—K. P. & Co.'s Solid Box, Blacksmith..... ₩ ℔ 13c
Parker's Parallel..... dis 10 %
Backus..... dis 25 %
" Howards." Parallel..... dis 20 %
Wardrobe Hooks.—Wire to drive..... ₩ gross $1 00
Weather Strips.—" Harmon's"..... per doz $5, dis 10 %
Weights.—Window Weights..... ₩ ℔ 2½c
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black..... ₩ ft &c.
Wrenches.—Genuine Wrenches, A. G. Coes..dis 40&5 %
Wringers.—
{ Novelty and Universal } Tub No. 2 ..... market unsettled
Eureka..... per doz $60 00
Novelty Bench. No. 4..... market unsettled

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz.)

Tin Plates.—₩ box
I. C. Char. 10x14 @ $11 50
I. C. Coke 10x14.. 9 50
Char. Roof. IC, 14x20, 11 25
Coke " IC, 14x20, 10 25
Pig Tin.— ₩ ℔
Banca..... 30c
Straits..... 25c
English..... 24c
Zinc.—Sheet..... ₩ ℔ 10c
Iron.—Sheet Iron, Russia..... " 18c
Sheet Iron, English..... " 5 c
" " American Refined..... " 5¾c
" " Galvanized..... " 10c
Plate Iron..... " 3¾c
Swedish and Norway Bar Iron, gold..... ₩ ton, $132 50
" " Shapes, gold..... 127 50
Norway Nail Rods, first quality, gold..... 145 00
" " second " " 135 00
Best Refined Bar Iron 95 00
The "Burden Best" Iron..... 95 00
American Pig Iron, Foundry, No. 1, X..... 33 00
" " " No. 2, X..... 31 00
" " Gray Forge..... 28 00
Scotch Pig Iron..... ₩ ton 35 00 @ 39 00
Wrought Scrap Iron..... 35 00
Steel.— ₩ ℔
Eng. Tool..... 18c
American Tool 14¾c
" Mach 10c
Pessemer..... 7¾c

Copper.— ₩ ℔
Sheathing..... 35c
Bolts..... 33c
Pigs..... 33c
Lead.— ₩ ℔
Pig..... 6¾c
Sheet & Pipe..8 4c, dis 10 %
Spelter...... ₩ ℔ 8c
Antimony...... ₩ ℔ 14c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co

Anvils.—Armitage..... ₩ ℔, gold, 15c
Peter Wright's..... " 14c
Wilkinson's..... " 12½c
Apple Parers.—Conqueror..... ₩ doz, $9 00
Lightning..... 9 00
Turn Table..... 9 00
Axes.—Hunt's..... ₩ doz $13 00 @ 13 50
Lippincott's..... " 13 00 @ 13 50
Lippincott's Pioneer..... 13 00 @ 13 50
Simmons'..... " 12 00 @ 13 00
Axles.—Kritch & Crane Mfg. Co.'s—
Patent Taper Axles ..... new list net
Swelled Taper Axles..... new list net
Concord Axles..... new list net
Red Jacket Axles ..... new list net
Common Axles, 1¼ inch and upward..... 3c ₩ st net
" " less than 1¼ inch..... ₩ ℔ 8¾c
Bellows.—" Best St. Louis make" 60c ₩ n. dis 20 %
Bells.—Troy, Church..... ₩ ℔, 45c
Light Brass Hand..... dis 50 %
Moore & Low..... dis 20 %
Bolts.—Arms, Bell & Co.'s Machine..... dis 20 %
Arms, Bell & Co.'s Carriage and Tire..... dis 25 %
Cast Butt Hinges.—Western Butt Co.'s—
Narrow Fast Joint..... dis 35 %
Broad Fast Joint..... dis 50 %
" Loose " ..... dis 50&10 %
Reversible..... dis 60 %
" Japanned and Silver Tipped..... dis 50 %
Loose Joint "Acorn" " " ..... dis 55 %
Lull & Porter's Blind..... dis 50 %
Wrought Butts.—Narrow..... dis 50 %
Reversible..... dis 25 %
Broad..... dis 30 %
Chain.—Eng. Coil..5-16 ⅜ 5-16 ⅜ 7-16 ½ n.
15 11 10 9½ 9 8c gold
Trace..... 6½-10-2 65c "
4-10-2 70c "
German Coil and Halter..... revised list add 10 %
Chisels.—Socket, Firmer or Framing..... dis 60 %
Clothes Wringers.—Crown..... ₩ doz $60 00
Novelty..... " 69 00
Universal..... " 69 00
Monitor..... " 69 00
Corn Cutters or Hooks.—Solid Steel.... ₩ doz $4 00
Disston's..... " 6 00
Crow Bars.—Steel Pointed..... ₩ ℔ 7c
Cutlery.—J. Russell & Co.'s..... new list net
Lamson, Goodnow & Co.'s..... at minimum list, net
Landers, Frary & Clark's.....
Files and Rasps.—Nicholson's Files...$5 00 less 10 %
Butcher's Mill..... $6 75
Heller's & Bros Horse Rasps..... dis 40 %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks..... dis 30 %
" " Handled Hoes..... dis 30 %
" " Planter Eye Hoes..... dis 30 %
Winsted's Planter Eye Hoes..... add 10 %
Hammers.—Yerkes & Plumb..... add 10 %
Masons' Hammers..... dis 5 %
Smith Hand Hammers..... ₩ ℔ 20c
Handles.—Axe.....Extra. No. 1. No. 2. No. 3.
$2 75 $2 25 $1 75 $1 00
Pick.....Extra. No. 1. No. 1½ No. 2.
$2 50 $2 00 $1 75 $1 25
Smith & Montross Fork, Hoe and Rake..... dis 20 %
Harrow Teeth.—1 inch iron..... ₩ ℔ 4½c
⅞ and ¾ inch iron..... " 4¾c
⅝ inch iron..... " c
Barbed or Headed..... ⅛c extra
Hatchets.—Hunt's..... dis 10 %
Simmons'..... dis 15 %
Hay Knives.—Lightning..... ₩ doz $30 00
Dunn Edge Tool Co.'s..... ₩ doz $14 50—dis 15 %
Fisher's..... " 16 50—dis 16 %
Hinges.—Strap and T—St. Louis make..... dis 25&10 %
Horse Nails.—Ausable..... 22c rate
Northwestern..... 22c
National Patent Pointed..... 21c
" " Extra Finished..... 22c
Horse Shoes.—B. I. (Perkins pe..... ₩ keg $6 00
Burden's..... " 6 50
Mule Shoes..... " 7 50
Rhode Island Trotting Shoes..... " 9 00
Locks and Latches.—
Jones & Nimick s..... revised list dis 40 %
Moorhead, Adams & Co..... revised list dis 40 %
Norwalk Lock Co.'s..... revised list dis 40 %
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks.... ₩ doz. $14 75 @ 15 25
" Grub Hoes, Oval Eye.... ₩ doz. 10 75 @ 13 00
Nails.—Wheeling..... $3 75 rates
Orders for 100 kegs 10c ₩ keg less.
Picks.—Klein, Logan & Co.'s R. R. and Clay ₩ doz.$11 00
Klein, Logan & Co.'s Coal..... " 8 50
" " Poll..... " 11 00
" " Stone..... " 14 50
" " Tamping ..... " 17 00
Planes.—Ohio Tool Co.'s..... dis 30 %
Sciota..... dis 30 %
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $33..... dis 20 %
Barton's Patent..... ₩ doz $25—dis 20 %
Vaughn's " ..... " 25—dis 10 %
Sad Irons.—Monitor Brand, Silver Polished.. ₩ ℔ 4c
Sash Weights.—Standard Solid Eyes..... ₩ ℔ 3½c
Saws.—Disston's..... dis 10 %
Hubbard, Lippincott, B. & Co.'s..... dis 10 %
Brauch, Crooks & Co.'s..... dis 10 %
Livingston's Patent Buck..... dis 15 %
Screws.—American Screw Co.'s revised list.... dis 45 %
Paris Furnace Co.'s..... new list dis 25 %
Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00
Extra Indian Pond..... " 7 50
Premium..... " 9 50
Diamond Grit..... " 13 50
dis 25 %
Shovels, Spades and Scoops.—
Ames'..... dis 10 %
Lippincott's..... revised list dis 15 %
Rowland's Maxwell..... dis 20 %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished..... ₩ ℔, 15c
Solid Cast Steel..... " 35c
Spaths and Cradles.—Seymour Mfg. Co.'s.. dis 20 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express..... dis 10 %
Blue Seat Springs..... new list dis 15 %
Tacks.—Norway Tack Co.'s ½ weight..... dis 72½ %
Brass ½ weight..... dis 50 %
Thimble Skeins.—Pump & Skein Co.'s..... dis 60 %
Traps.—Newhouse Patent ..... dis 15 %
Vises.—Solid Box..... ₩ ℔ 16c
Wilson Mfg. Co.'s..... dis 15 %
Wrenches.—Coes' Genuine..... dis 33½ %
Coes' Pattern..... dis 50 %
Taft's..... dis 60 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.

Tin Plate.

IC, 10x14, Char	$11 00@11 50	IX, continuous, 20 in. x 200 ft.....	
IX, 10x14, "	14 00	IC, 10x14, best Coke.....	$10 00
IC, 12x12, "	12 00	IC, 10x14, good Coke.....	10 00
IX, 12x12, "	14 50	IC, 10x20.....	11 00
IC, 14x20, "	12 50	IC, 14x20.....	10 00
IX, 14x20, "	15 00	IC, 11x20, Coke Lead.	8 50
IC, 14x20, Terne	$10 75@11 00	IX 20x28. "	$1 25@26 00
IX, 14x20, "	13 50	IC, 10x14, punch'd for Safes.....	10 00
IC, 2x28, "	21 00@22 00		
IC, continuous, 20 in. x 200 ft.....			

Block Tin.

Large Pigs Straits..... 28c | Bars..... 28c
Small " English..... 27c |

Sheet Zinc.

Casks..... ₩ ℔ 10c | Sheet..... ₩ ℔ 10½c

Solder.

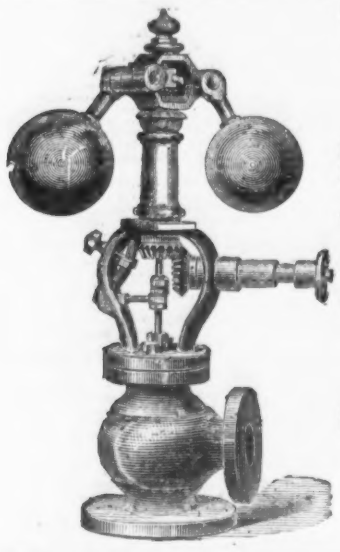
No. 1, Refined, in bars or plate..... 17c
No. 2, " " " 16c
Pig Lead..... 7½c

Sheet Copper.—18 to 100 lbs. Sheets 30x60..... 32c
14 to 16 lbs., Sheets 30x60..... 32c
10 to 12 lbs., " and 30x72..... 35c
6 to 9 lbs., " 32c
Tinned, 14 and 16 oz. 14x48..... 31c
Planished, 14 and 16 oz. 14x48..... 37c
" No. 7, 8 and 9..... 39c
Copper Bottoms 32c

Sheet Iron.—

	Com'n.	Sm'th.	Char l.	Juniata.
No. 16 to 20.	4¾c	5¾c	7¾c	9¾c
No. 22 to 24.	4¾c	5¾c	7¾c	9¾c
No. 26.	5 c	6 c	8 c	9¾c
No. 27.	5¾c	6¾c	8¾c	10c

Galvanized Iron...... dis 20 %
Iron Rivets...... dis 25 %
Iron Wire...... dis 35 %
Coppered Market Wire...... dis 30 %
Copper Rivets and Bars...... dis 25 %
Russia Iron.—Nos. 9, 10, 11 and 12. ₩ ℔..... 20c
No. 1 stained, ₩ ℔..... 18c
Imitation Russia, ₩ ℔..... 15c
Retinned Stamped Ware..... dis 5 %



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If, after a fair trial, it does not, we will take it off at our own expense.

Shive Governor Co

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ALSO,

SHIVE'S PATENT WATCHMAN'S CLOCK AND DETECTOR.

The Best and Cheapest Watcher of the Watchman made

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Circulars sent free.

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Hartford, Conn.,

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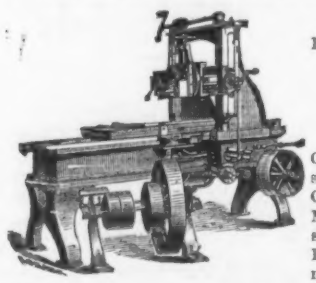

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Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.

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No. 24 Columbia Street, New York,

MAKER AND PATENTEE OF

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ROLLER TUBE EXPANDERS

And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order.

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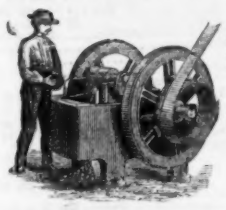
STONE & ORE BREAKER.

New Pattern with Important Improvements & Abundant Strength



For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

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Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar, Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, &c.**

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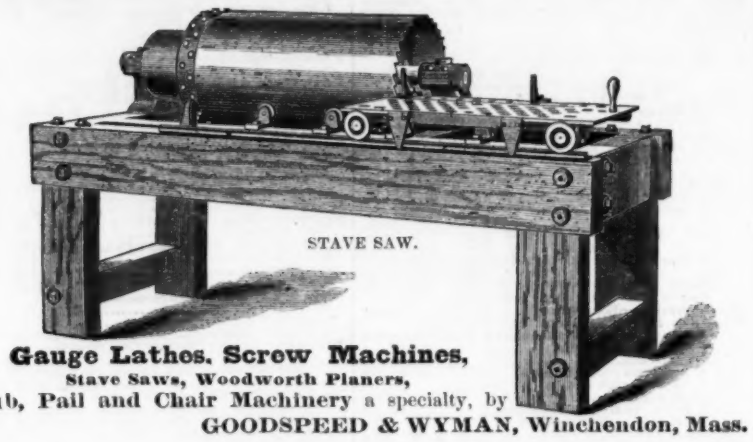

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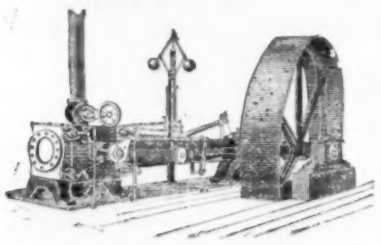

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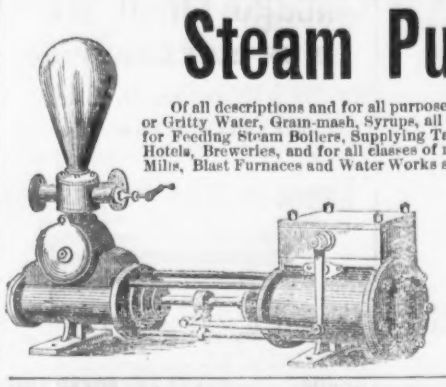

Of all descriptions and for all purposes, of any proportion or size, for pumping Hot, Cold, Fresh, Salt, Muddy or Gritty Water, Grain-mash, Syrups, all kinds of Beer, Acids, Molasses, and all heavy and thick fluids. Also for Feeding Steam Boilers, Supplying Tanks, and for Sugar Refineries, Tanneries, Oil Refineries, Gas Works, Hotels, Breweries, and for all classes of manufactories; for Draining Mines and Excavations, and for Rolling Mills, Blast Furnaces and Water Works supplying Cities, Towns and Villages with Water; also, for Wrecking purposes and Steam Fire Engines for Land and Sea.

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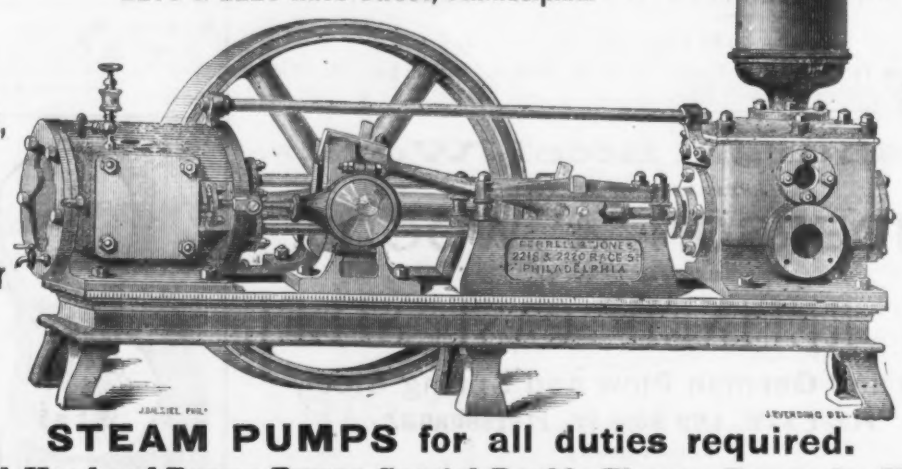

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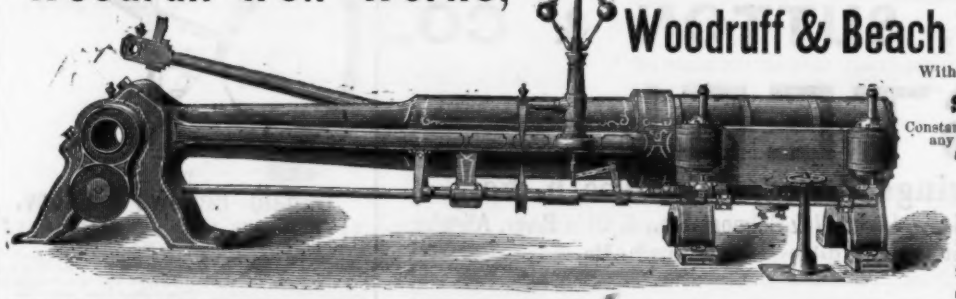

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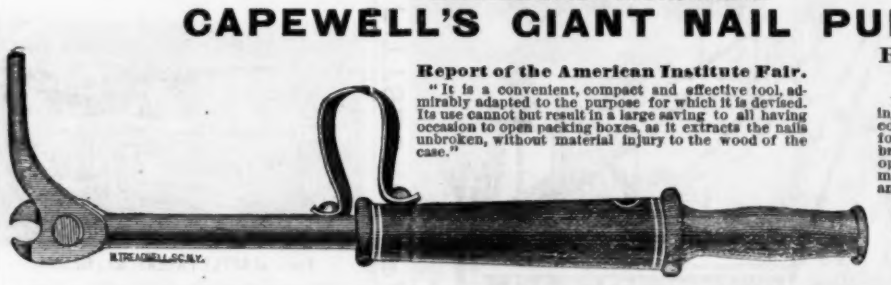

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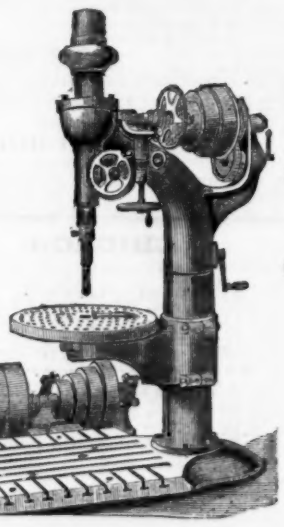

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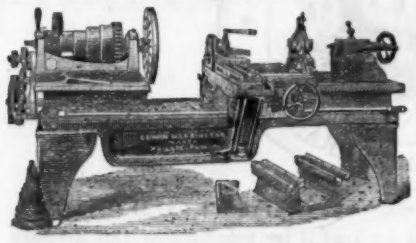

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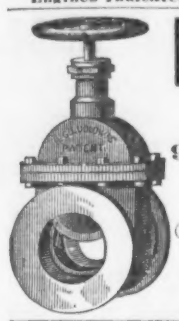

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Cheaper than any Engine offered of the same capacity.

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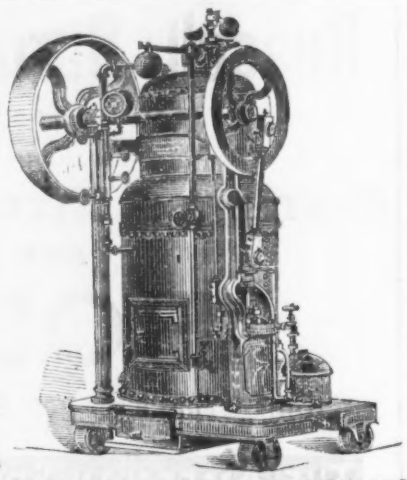

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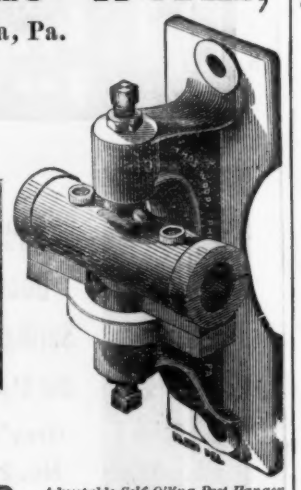

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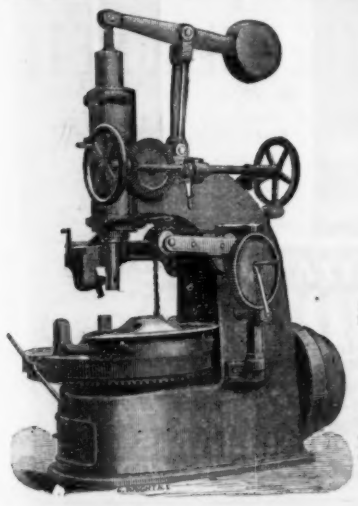

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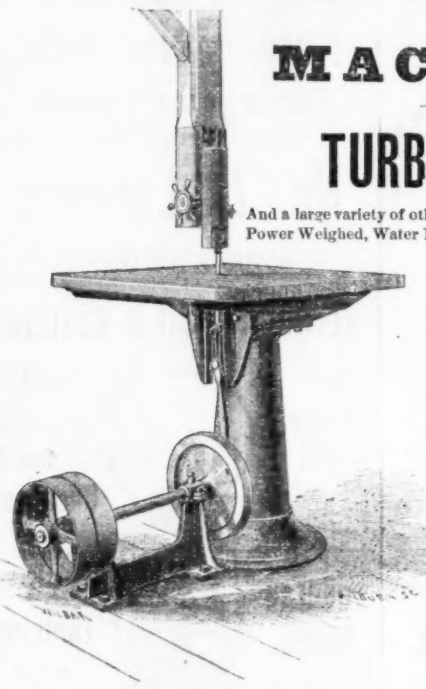

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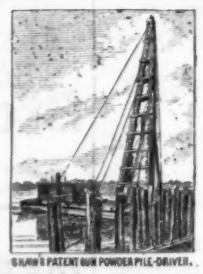

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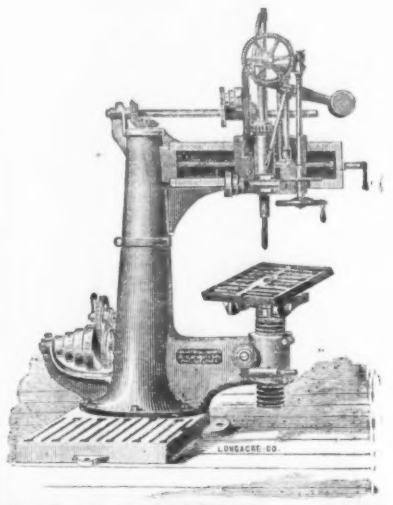

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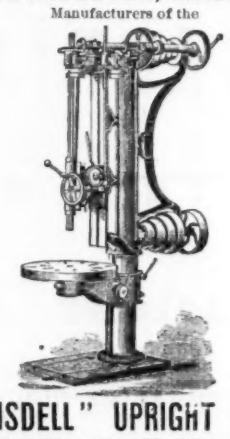

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VERTICAL STEAM
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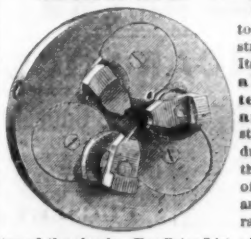
The Safest and Best in the Market.

THE HASKINS ENGINE

SEMI-PORTABLE

SEND FOR CIRCULAR

JOHNSON'S PATENT UNIVERSAL
LATHE CHUCK.



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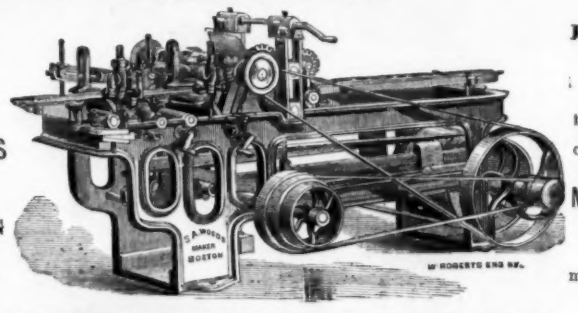

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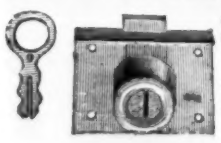

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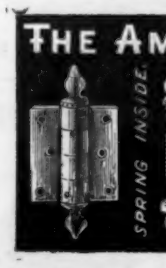

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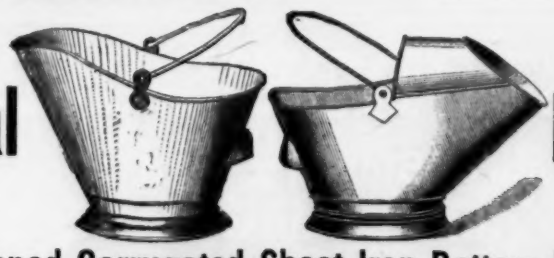
Coal  Hods.

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